

# **Advisory Committee on Acoustic Impacts on Marine Mammals**

Sponsored by the Marine Mammal Commission

Fourth Plenary Meeting  
November 30, December 1-2, 2004

New Orleans, Louisiana

## **Final Meeting Summary**

**APRIL 1, 2005**

Prepared by the Facilitation Team of

Suzanne Orenstein  
Lee Langstaff

## Advisory Committee on Acoustic Impacts on Marine Mammals

**Fourth Plenary Meeting**  
**November 30 – December 1-2, 2004**  
**New Orleans, Louisiana**

### Final Meeting Summary

The fourth meeting of the Advisory Committee on Acoustic Impacts on Marine Mammals was held on November 30 and December 1-2, 2004 in New Orleans, Louisiana. The Advisory Committee, convened by the Marine Mammal Commission, is comprised of a diverse group of representatives of entities that produce sound in the marine environment, government agencies with responsibilities or activities significant to marine mammals, academic researchers, and non-governmental environmental and animal welfare organizations. The objectives of this meeting were to:

- Review and discuss draft products developed by Subcommittees and Working Groups;
- Develop a preliminary working list of recommendations; and
- Plan for the process of developing and finalizing the Committee's final report.

What follows is a summary of the presentations and discussions at this meeting.

#### **DAY ONE – Tuesday, November 30, 2004**

##### **Welcome and Introductions**

***Suzanne Orenstein, Facilitator***, opened the meeting by inviting Committee members and their alternates, Committee staff, facilitators, and observers to introduce themselves. A list of meeting attendees is attached (Attachment A).

***David Cottingham, Executive Director of the Marine Mammal Commission***, welcomed participants to this fourth plenary meeting, and noted that a great deal of constructive discussion and effort has gone on in Subcommittees and Working Groups since the Committee's third meeting in July, and at the International Policy Workshop held in London in September. He thanked all of those who have participated in these efforts for their commitment and contribution and expressed his belief that the interim work will enable the Committee to move forward in a constructive direction.

##### **Agenda for this Meeting**

Suzanne Orenstein briefly reviewed the agenda for the meeting, noting that the first day would focus on issues related to management and mitigation, primarily through plenary and small group discussions of the work of the Subcommittee on Management and Mitigation. The focus of the second day would be on issues related to research, including the work of the Subcommittee on Synthesis of Current Knowledge, preliminary thoughts on research recommendations, and the efforts

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of Working Groups to address barriers to research identified at previous meetings. The focus of the third day would be on discussion and planning related to the Committee's final report, including discussion of the draft outline and planning activities and timelines for accomplishing the Committee's work. In response to Ms. Orenstein's invitation for comments or questions regarding the agenda, Committee member Donna Wieting requested time on the agenda for the National Marine Fisheries Service (NMFS) to make a brief presentation to update participants and receive feedback on a new on-line permitting system. It was agreed that NMFS would provide written hand-outs for participants to review overnight and an opportunity would be provided for a brief presentation linked to the discussion of permitting issues on the second day.

### **Third Plenary Meeting Summary**

Facilitator Lee Langstaff inquired as to the status of Committee members' review of the draft summary of the third plenary meeting that had been circulated to them. Several members indicated that they would like to submit a few, but not extensive, comments. It was agreed that rather than take plenary time to edit the draft, Committee members who wished to submit comments will do so in writing by December 8 and the facilitation staff would then revise and finalize the summary for distribution.

### **Process Overview and Ground Rules and Process for Working Toward Agreement on Advisory Committee Products**

Ms. Orenstein took a few moments to review where things stand with respect to the overall process of the Advisory Committee. She noted that leading up to this point most of the emphasis has been on gathering and sharing information and mutual education. The process from this point on will be primarily focused on developing a report that builds on this information, and the emphasis of Committee discussions will shift to negotiations as the Committee works to reach consensus on the content of its report.

Ms. Orenstein encouraged Committee members to consider two goals for this meeting:

1. To work toward formulating a vision for the Advisory Committee's product, including what agreements may be possible; and
2. In thinking about the vision, to consider where the power of this group can be most usefully exercised. That is, to think about how to capture the greatest value possible from a consensus of this unique multi-interest group. She noted that whatever weight the product of this group has with Congress will be because of the unique make-up of the group, as this is what makes it different from previous groups (*e.g.*, NRC or other expert panels, scientific workshops, etc.) that have worked on this topic.

Ms. Orenstein reminded participants of the protocols that may be particularly useful as the process moves forward from here and seeks agreement among members. In particular the Committee's Operating Procedures that state that:

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- “All agreements on preliminary products will be considered provisional until the Committee has reached consensus or otherwise finalized its final report” and that
- “Any member may request a caucus with any other member(s) at any time. The person requesting the caucus will specify who is included in the caucus and how much time is being requested.”<sup>1</sup>

Ms. Orenstein emphasized that the need to caucus may become more important and frequent as areas of potential agreement are negotiated, and that Committee members should use caucusing as needed.

Finally, Ms. Orenstein urged Committee members to keep the big picture in mind and be open to creative ideas to address one another's concerns as negotiations move towards building the agreements that will comprise the Committee's report. She urged participants to be clear in articulating objections to proposed text and to offer suggestions for how it could be revised to address their concerns. She noted that both preliminary agreements and disagreements will be reflected in any text that is produced through discussion from here on, and proposed text will be bracketed wherever full agreement is not achieved. She pointed out that the product will most likely continue to evolve until the last plenary meeting.

In response to a question about the amount of time and number of meetings available to the Committee to complete its negotiations, David Cottingham (Marine Mammal Commission) indicated that there would be at least one more meeting in the spring, as originally planned. He noted the potential need for yet another meeting, but suggested, and the Committee concurred, that a more concrete discussion of this would be possible at the end of this meeting.

### **Review and Discussion of Report from Subcommittee on Management and Mitigation**

Suzanne Orenstein introduced this session by providing an overview of the status of the work of the Subcommittee on Management and Mitigation. The Subcommittee has developed and reviewed three drafts of its report based on the outline approved at the last Advisory Committee meeting. However, it has not had time to integrate comments from all Subcommittee members on the most recent draft. The redlined versions distributed to the Advisory Committee by e-mail do not constitute a draft ready for wide distribution, but Advisory Committee members are welcome to comment on that draft at this meeting. In addition to developing a draft report, the Subcommittee developed a discussion paper listing policy issues and options for detailed discussion at this meeting.

### **Comments on the Draft Report on Management and Mitigation**

After making general positive comments about the value of having the draft report and the information it contained, Committee members made several suggestions for improvements in the draft report.

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<sup>1</sup> Text from the Advisory Committee's Operating Procedures, which can be found at <http://mmc.gov/sound/plenary2/plenary2.html>.

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- Several commenters suggested creating a shorter, less detailed document. Others noted that some level of detail is needed to apprise Congress of the many uncertainties and issues that need to be addressed. Some members proposed that an executive summary be the vehicle for making the document more manageable.
- One Advisory Committee member noted his concern that the document may be too prescriptive.
- Another member expressed the view that in all of the detail in the document, there is very little that constitutes new information. She recommended more focus be placed on moving toward new approaches and ideas. Another member noted that she feels there is resistance among Subcommittee members to making changes and discussing new solutions.
- A member suggested that the report should focus on the specific impacts that need mitigation.
- Another member noted that the discussion of the costs of mitigation seemed excessive, and that the document should also discuss the economic benefits of conducting mitigation.
- Several members noted that, in deciding how much detail to include, the Subcommittee should consider what is important for Congress to know. Others noted that Congress is concerned primarily about appropriations and statutory changes, and that considerations related to such issues should therefore be the main focus of the report.

The Subcommittee members agreed to take these comments into account as they continue their work.

### Management and Mitigation Policy Issues

The Subcommittee on Management and Mitigation proposed several policy issues for discussion by the Advisory Committee, including:

- Goals of the management system,
- Adequacy of current statutes,
- Precautionary approaches,
- Unaddressed and unregulated sources,
- Mitigation effectiveness,
- Adaptive management, and
- Risk assessment.

The first two of these topics were discussed in plenary; the next four in small groups, and the last was not taken up in any detail. The Subcommittee posed a series of questions on each of these issues in the policy issues discussion paper they provided for the Committee. These questions served as the basis for the small group discussions. The discussion paper is included as Attachment B. A brief summary of the discussion of these topics follows.

### *Goals of Management System (Plenary Discussion)*

There was extensive discussion about the desired goals for the management and mitigation system. A member suggested that the Committee focus on what it can agree on, and listed the following as potential agreements:

1. All members want to reduce known impacts on a single animal or group of animals;

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2. All members want to maintain important uses of the ocean by humans; and
3. All members want to obey the laws that set out standards for protecting marine mammals.

The discussion then turned to the overall goal for management of acoustic impacts. One member proposed that the goal be to reduce sound in the ocean; another suggested the goal should be to reduce harmful sound; another suggested targeting reductions to sounds that are likely to have negative impacts. Others noted that addressing the scientific uncertainties about baseline conditions, impacts, and mitigation effectiveness were key to implementing an agreed upon goal. Others asked whether the current statutory guidelines were sufficient, and whether regulators could be doing more to implement them.

Through its discussion, the Committee outlined several components of a goal statement for the management system, as well as several proposed recommendations for addressing management. A small group agreed to draft a proposed statement of the goal for the management system. The Committee reviewed the draft statement and revised it to create the following agreement (with one member objecting to item 2) on proposed language and recommendations. Areas of disagreement are bracketed.<sup>2</sup>

1. Effects of anthropogenic sound on marine mammals is an issue that needs to be addressed through [mitigation and] management.
2. The Advisory Committee agrees, as a general concept, that [adverse effects associated with][hazardous] anthropogenic sound with [the/its] potential to harm marine life should be minimized in the marine environment. As a specific implementation of this general concept, the Committee agrees that sound with demonstrable negative effects should be a priority for mitigation and reduction. However, science has not been able to identify all situations and circumstances in which anthropogenic sound will have negative effects. Where significant scientific data are absent, the relative risk of potential harm should be evaluated. [Where there is reasonable potential for negative effect, it is appropriate to use a precautionary approach, (and lack of full scientific certainty should not be used as a reason for postponing measures that prevent or minimize such impacts) and to recommend additional mitigation measures. [It is appropriate to use precautionary approaches where practicable.]
3. The management and mitigation system should address:
  - Chronic and acute sound;
  - Long term and short term effects;
  - Impacts on individuals and populations;
  - Methods for allowing activities to go forward with least adverse impact practicable on marine mammals; and
  - Compliance with legal requirements.

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<sup>2</sup> One Committee member expressed dissent from the entire substance of item 2 but suggested, after the meeting, the following substitute language. "The Advisory Committee agrees, as a general concept, that adverse effects associated with anthropogenic sound with potential to harm marine life, should be minimized in the marine environment."

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Potential Recommendations regarding management and mitigation were also discussed by the Committee, as described below.

1. A comprehensive management system for acoustic impacts on marine mammals is needed, but it is difficult to create it given current state of knowledge. [Note: the Advisory Committee recommended the development of a framework for an improved comprehensive system and asked the Subcommittee to develop a proposal for this framework.]
2. There is a need to develop programs, linked to mitigation requirements, to research, measure, and monitor the effectiveness of mitigation. This information should be used to refine [adaptive] management approaches.
3. Implement mitigation in a practicable manner.
4. More resources are needed to conduct research [relevant to mitigation and management].
5. More resources are needed for management, including enforcement.

### Adequacy of Current Statutes (Plenary Discussion)

Another policy issue raised by the Subcommittee on Management and Mitigation concerned the adequacy of the current statutes that govern the management of acoustic impacts on marine mammals (including the Marine Mammal Protection Act, Endangered Species Act, and National Environmental Policy Act). There was a range of views about the adequacy of the current statutes, as outlined below.

- One view was that the Committee might be able to agree that the statutes could be improved, but that they would not agree on what the improvements should be.
- Another view was that the statutes are unevenly implemented and enforced and there is insufficient funding to implement the statutes, and that perhaps these issues are more important than changing the laws.
- One member expressed the view that it is imperative to make changes to the Marine Mammal Protection Act (MMPA) to make it work more effectively for all.
- It was noted that interest groups have been advocating for ten years about reauthorizing the MMPA, and that those efforts have not been successful. Perhaps it is time for a new approach.
- Another member suggested that the Advisory Committee identify the components of the current statutory system that are not currently effective, and focus on solutions to those problems.
- Several members expressed strong opposition to opening up the statutes for revision.
- Another member noted that the current statutes do not address the international components of the issue.
- Several regulators noted that improving implementation of the current statutes, especially regarding management and mitigation, would be the most constructive goal for the Advisory Committee.
- Another member noted that the MMPA was written before acoustic impacts were a general concern, and suggested that moving toward a regulatory approach instead of a permitting approach might be one improved method for implementing the current statutes.

### Mitigation Effectiveness (Small Group Discussion)

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*Small Group participants: D. Bernhart, J. Caldwell, D. Costa, D. Cottingham, G. D'Spain, M. Green, E. Heskett, P. Nachtigall, & M. Purdy*

The small group on mitigation effectiveness agreed with many of the recommendations from the Subcommittee, including the need to:

1. Develop methodologies for assessing effectiveness;
2. Evaluate effectiveness while applying the mitigation measures;
3. Build research and reporting requirements into regulations and authorizations, and improve or standardize observer and reporting methods so that valuable information can be obtained in this manner;
4. Employ techniques that include precaution and address impacts that may lead to acute impacts (*e.g.*, behavioral disturbance);
5. Continue research to define what constitutes a take (*e.g.*, what exposure levels cause a take), including both acute and chronic effects in the definition;
6. Evaluate the extent to which a mitigation measure prevents takes (*e.g.*, under what conditions can observers be used), addressing questions about detection (*e.g.*, investigate the idea that small cetaceans are easier to see and hear while large cetaceans are more difficult to see but may be easier to hear);
7. Use current mitigation measures until have something better;
8. Use integrated combinations of mitigation techniques that may be adequate;
9. Recommend suites of tools that will get to desired goal;
10. Develop best practices (*e.g.*, identify what we can say about which are best in which cases).

The small group recommended that time-area closures be used as a first choice mitigation measure, and that other issues discussed above be considered when time-area closures are not possible.

### Unaddressed and Unregulated Sources (Small Group Discussion)

*Small Group Participants: D. Wieting, K. Metcalf, K. Balcomb, B. Tackett, M. Reeve, F. Stone, D. Ketten, L. Weilgart, & S. Wan.*

This small group discussed whether and how to address sound-producing activities that are either unaddressed (defined by the group as activities for which statutes exist under which they could be regulated but they currently are not) or unregulated (defined by the group as activities not covered by any statutes). The group began by developing a list of those sources, along with the agencies or entities that might be responsible for regulating them.

*Unaddressed* sound producing activities that have the potential to cause acoustic impacts and the agencies who would be likely to have responsibility for them were described by the group as follows.

- U.S. commercial shipping (National Marine Fisheries Service, U.S. Coast Guard)
- Recreational boating (National Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Coast Guard, States)
- Recreational fishing (National Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Coast Guard, state governments)



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- Whale-watching vessels (National Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Coast Guard)
- Wind farm operations (U.S. Army Corps of Engineers and state governments)
- Ice breaking (National Marine Fisheries Service, U.S. Fish and Wildlife Service, U.S. Coast Guard)
- Commercial sonars and echo sounders (National Marine Fisheries Service?)
- Military sonars (National Marine Fisheries Service, Department of Defense, state governments)
- Acoustic harassment and deterrent devices (National Marine Fisheries Service, U.S. Fish and Wildlife Service)
- U. S. Geological Survey activities (National Marine Fisheries Service, U.S. Fish and Wildlife Service, state governments)

*Unregulated* sound-producing activities that have the potential to cause acoustic impacts but that are not covered by existing statutes and the agencies who would be likely to have responsibility for them were described by the group as follows.

- Non-U.S. commercial shipping (in non-U.S. waters: flag states, port states and coastal states through International Maritime Organization instruments, other international instruments e.g. UN Convention on the Law of the Sea )
- Commercial fishing (National Marine Fisheries Service, U.S. Coast Guard)
- Acoustic harassment and deterrent devices *when exempted because they are required under MMPA Section 118* (National Marine Fisheries Service, U.S. Fish and Wildlife Service)

The small group also made the following recommendations.

1. Develop performance standards for acoustic harassment and deterrent devices (including a balancing of costs and benefits). [At least one Committee member expressed reluctance to endorse this recommendation since these devices are designed very specifically to reduce marine mammal bycatch.]
2. For U.S. commercial shipping:
  - Review existing practices;
  - Conduct an impact analysis;
  - Propose adjustments to operations (*e.g.*, slow down in U.S. exclusive economic zone);
  - Improve design and construction (start with voluntary actions); and
  - Identify how to best address acoustic issues for commercial issues, and by whom such steps should be taken.
3. For military sonar:
  - Conduct an impact analysis;
  - Review usage for opportunities to minimize; and
  - Develop new technology to allow future minimization of sonar use.
4. Get U.S. Coast Guard, as well as other relevant agencies, involved in the management of this issue.

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5. Promote innovation in regulatory programs to address the fact that it is impossible to fit new permittees into the existing permitting process (*e.g.*, it is impractical for every recreational boater to apply for a permit).

### Adaptive Management (Small Group Discussion)

*Small Group Participants:* M. Kodis, D. Pittenger, P. Dalton, J. Ray, M. Simmonds, J. Hildebrand, M. Jasny, and C. Corrigan

The small group discussing adaptive management developed the following report (reproduced here verbatim).

Why is adaptive management appropriate? Because science is very limited, but ongoing, and a process is needed that brings new information to bear on management efforts. Some mechanisms already exist to do this, but there is room for improvement in their application. Regulatory agencies should integrate the precautionary approach into adaptive management.

Statutory/regulatory mechanisms (*e.g.*, annual incidental harassment authorizations, Notice to Lessees processes, National Environmental Policy Act “significant new information” provisions) appear to be in place for evaluation.

Adaptive management doesn’t appear to be applied to the same degree in all situations on a systematic basis, due to limitations in resources and information, but the process can be improved:

- (1) Need better integration of research and management needs;
- (2) Need regular assessments of species, populations, and ecosystem characteristics;
- (3) Integrate all forms of monitoring including that done from platforms of opportunity; and
- (4) Need to identify measurable triggers (*e.g.*, initial distribution and abundance, changes in distribution, strandings, physiological changes).

The definition of adaptive management proposed by the Subcommittee on Management and Mitigation was not changed by the small group discussion. That definition is as follows: adaptive management might be defined as the cyclical process of systematically testing assumptions, generating learning by evaluating the results of such testing, and further revising and improving management practices.

In the plenary discussion following the Small Group report, one Committee member noted that the National Marine Fisheries Service Stock Assessments do not provide the information needed for Adaptive Management. The information is not at a fine enough spatial scale. The member further noted that information on synergistic and cumulative impacts needs to be considered in adaptive management.

### Precautionary Approach (Small Group and Plenary Discussion)

*Small Group Participants:* N. Rose, S. Tomaszewski, B. Lang, J. Reynolds, J. Wilson, C. Schoennagel, A. Shor, N. Young, C. Gill

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This small group discussed the proposed language from the report of the U.S. Commission on Ocean Policy on a precautionary approach,<sup>3</sup> and was not able to agree during its discussion to recommend that the Advisory Committee use that definition in its own report. Some participants argued strongly that the Advisory Committee should adopt the definition of the precautionary approach approved by the U.S. in 1992 as part of the Rio Declaration.<sup>4</sup> Others argued that the Rio Declaration was over ten years ago, that its definition was not complete or up to date, and that the U.S. government had endorsed a number of alternative definitions in other fora. The small group also debated the specific inclusion of the words “cost-effective” in the definition of precautionary approach. There was no agreement on the use of the term cost-effective, nor on the use of the word “balanced.”

The small group agreed that the risk assessment model used by the National Marine Fisheries Service does build precaution into agency decision-making. The group also noted, as an example of current precautionary practice, that the Minerals Management Service requires mitigation for impacts on sperm whales in the Gulf of Mexico in the absence of conclusive information on effects. An example of where additional precaution may be desirable was identified in the prohibition of seismic activity in areas frequented by western gray whales and in humpback calving grounds.

The full Advisory Committee discussed the precautionary approach in a plenary session later in the meeting. The Committee clarified that it needs to be clear in its report about what the Committee means when it uses the terms “precaution” or “precautionary approach.” Several points made in the plenary discussion are described below.

- Interaction of precaution and management value judgments is key.
- “Practicable” may be a preferable term to precautionary.
- Balance between scientific knowledge and need to act is a key element of precautionary approaches, as is the ability to take action in absence of scientific uncertainty.
- The “cost-effective” issue should be separated from the precautionary approach issue.
- A common theme in all previous definitions is balance.
- Application of the approach is more important than the definition.

Several proposals were made to move forward with the discussion of how to incorporate a precautionary approach into the Committee’s report to Congress. Among the proposals were the following:

- Use the definition from the U.S. Commission on Ocean Policy;
  - Use the Rio Declaration’s definition; and
  - Develop an “operational definition” and identify what needs to be done differently in the management system.
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- The Advisory Committee agreed to ask a small group to complete the tasks described below. Refine the draft language from the Management and Mitigation Policy Issues document (Attachment B) to describe what the Committee means when it uses the term “precautionary

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<sup>3</sup> See pp. 65 in Chapter 3 of the final report of the U.S. Commission on Ocean Policy, available online at [http://www.oceancommission.gov/documents/full\\_color\\_rpt/welcome.html](http://www.oceancommission.gov/documents/full_color_rpt/welcome.html).

<sup>4</sup> See Principle 15 of the Rio Declaration, available online at <http://www.unep.org/Documents/Default.asp?DocumentID=78&ArticleID=1163>.

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approach.” The group should look not only at the definition quoted from the U.S. Commission on Ocean Policy, but also the explanatory text to reflect all of the important points.

- Examine the operational implications of the group’s proposed language, including:
  - How the language would apply in the current regulatory system;
  - Limitations of the definition; and
  - Gaps in concepts that are not covered in the language.
- Acknowledge that there are multiple definitions of the precautionary approach, and describe how they differ.

The small group that will work on this task includes Chip Gill, Michael Jasny, Jim Ray, Frank Stone, Sara Wan, Judy Wilson, Nina Young, and the Marine Mammal Commission. Suzanne Orenstein will arrange a conference call to begin their work on the tasks outlined above.

### Summary of Discussion of Management and Mitigation Report

The Advisory Committee discussion of the management and mitigation draft report and issues resulted in the following outcomes:

- The Committee developed tentative agreement on goals for the management system, and some preliminary recommendations;
- Committee members agreed to submit written comments on Draft 3 of the Subcommittee’s report by December 27;
- The Subcommittee will hold two two-day meetings on Feb. 7-8 and March 8-9 in Washington, DC;
- A small group will revise draft language for a description of a “precautionary approach” before next Management and Mitigation Subcommittee meeting;
- A revised draft report from the Subcommittee will be distributed to the Advisory Committee prior to the April plenary meeting.

### Public Comment

Four meeting observers offered public comment. Their comments are summarized below, and any written comments they submitted are available at <http://www.mmc.gov/sound>.

**Michael Stocker, SeaFlow.** There are clearly two camps: one that believes we should stop what we’re doing to avoid catastrophe, and another that believes we should wait until impacts are clear and defined before taking steps to mitigate. It is a question of informed speculation versus certainty. We need to get beyond this. We do know that sound can affect marine mammals in adverse ways. We need to get out of the mode of discussing the specifics of causes and mechanisms of impact and consider mitigation not just as it relates to received tolerance levels or observable reactions of animals, but also as it relates to the mitigation of sources themselves. We can address the need to maintain the “oceans as global highways” while focusing efforts on determining where users should not go, or would be willing not to go. We can do this by using a “scalable progressive policy” (Mr. Stocker offered to provide a paper on this concept) that allows for the adjustment of regulations as new information becomes available.

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**Mac Hawley, Hawley Family Foundation.** My interest in this issue is multi-faceted because my family was involved with building large guns and missile launchers for the Navy, and I used to be CEO of an oil and gas company. My current mission is as president of a private foundation distributing \$1.2 million for education and direct action related to alerting the country and the world about the real problems we have with noise in the oceans. We have now seen three recent reports (from the Pew Oceans Commission, U.S. Commission on Ocean Policy, and World Conservation Union/IUCN) all of which declare that the oceans are in deep trouble now, having suffered a worldwide crash over the last 100 years. Oversight by a department that promotes trade (*i.e.*, the Department of Commerce), and which is a cousin of the Department of Defense, makes it very hard to say no to permit requests.

The problem here is that the Navy, Department of Defense, and other stakeholders are committed to preserving the status quo, when instead what we need is a reversal of policy. Current government structures are not adequate to deal with this issue.

I will submit written comments and copies of a video on sounds in the oceans that I will give to the Marine Mammal Commission for the record.

**Ben White, Animal Welfare Institute.** I appreciate the efforts of this Committee to address this hard issue. We seem to be struggling with the fundamental question of whether sound is an issue. But it is not clear whether our behaviors would change even if we had a clear answer to this question. If anthropogenic sound meant the demise of the oceans, marine mammals and fish, would behavior change? Industry does not believe it should make any changes without clear evidence. But the precautionary approach dictates that in the absence of clear evidence we should come down on the side of the animals. When did the burden of proof change from requiring demonstration that there is no problem in order to go ahead with an activity to requiring definitive proof of a problem before altering or ceasing an activity? What is considered enough information? Why are studies that indicate harm not given credence? Why is the information not accepted or incorporated even if shown here in this Committee, such as the new modeling work done regarding exposure levels in the Bahamas strandings and other new information regarding beaked whales in the last year? I am concerned that this Committee is moving in the direction of allowing all of the current activities to continue with mitigation measures that it knows probably don't work. This is not enough. So many others have acknowledged this problem (European Union, International Whaling Commission, World Conservation Union/IUCN, parties to the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area, etc.) and we must adopt the precautionary principle. The findings of this group must be incorporated into policy that does not simply continue the status quo.

**Lindy Weilgart, Dalhousie University.** I am not convinced that technological advances have focused on making sounds safe for marine mammals to the maximum extent possible, especially given that the underwater noise issue really has only gained prominence in the last few years.

It is true that more information would be helpful in determining how to change noise characteristics to benefit marine mammals. However, we do know something about how to improve the sound and make it safer. We know that the mid frequencies and perhaps low frequencies are worse than the high frequencies; we know that short rise times should be

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avoided, that omni-directionality is worse and that it is probably better to direct a signal downward in a focused way, that high intensity is worse than low intensity, that long durations are worse than short, and that lower duty cycles are better, and that it is best and to avoid large scale impacts in both space and time. We know that it would be safer to keep noise away from whales and productive habitats, and especially from areas of known beaked whale abundance. Also, the oil and gas industry could make their air gun signals more coherent using fewer mid-frequencies as these are of no use to their purposes.

Also, we can do a lot of noise impact studies on fish, for instance, that we can't do on whales and that could tell us more about broad ecological effects and perhaps population dynamics. Whales, which are more intractable study animals and present more ethical issues, may not be the best animals to focus on initially.

### **DAY TWO – Wednesday, December 1, 2004**

#### **Presentation of Results of NRC Panel on Characterizing Biologically Significant Marine Mammal Behavior**

##### ***Douglas Wartzok, Florida International University and Committee of Scientific Advisors to the Marine Mammal Commission***

Dr. Wartzok, who served as chair of the National Research Council (NRC) panel on Characterizing Biologically Significant Marine Mammal Behavior, began by reviewing the membership and charge to the panel, which was to review relevant literature and develop a report describing when behavioral changes resulting from human activities become biologically significant. The group looked at both the individual and population levels, and focused particularly on clarifying the scientific basis for management determinations about behavioral or physiological responses in individuals that are biologically significant for populations. (Dr. Wartzok's presentation can be found at <http://www.mmc.org/sound>.)

Dr Wartzok's description of the panel's findings is summarized below.

- It is not clear whether anthropogenic sound is a serious problem in its own rite, or only a second order effect. The panel found no evidence that sound has had a significant impact on any marine mammal population, although biologically significant impacts caused by other factors (*e.g.*, Steller sea lion declines) have been documented.<sup>5</sup>
- In the case of beaked whales, no conclusions can be drawn about whether the impacts of sound are significant or not, because of a lack of information about population sizes and the impacts of sound on animals that do not strand.
- Regardless of significance, the panel recognized the need to minimize conflict between human uses of the oceans and marine mammals.
- Conclusions about the cause and effect and significance of impacts from various threats are difficult to determine even for humans, which are relatively easy to study and receive substantial attention. Demonstrating behavioral changes that lead to altered foraging efficiency, habitat abandonment, declines in reproduction, or other biologically significant effects in marine mammals is extremely challenging, given the limited available information and challenges in

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<sup>5</sup> The panel's report states that "No scientific studies have conclusively demonstrated a link between exposure to sound and adverse effects on a marine mammal population" (National Research Council. 2005. *Marine Mammal Populations and Ocean Noise*. National Academies Press: Washington, DC. pp. 15.)

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studying these groups. However, the panel made an effort to bound the problem (*i.e.*, describe the best- and worst-case scenarios given available information), and set forth a conceptual model to help guide future study. The model would culminate in the creation of an internet-based “intelligent system” for managers to determine a *de minimus* standard below which predicted impacts of activities are clearly not significant, and the panel recommended that it be developed within a year.

Dr. Wartzok described the panel’s main recommendations, which included the following:

- Complete the work recommended in the three previous NRC reports on this subject;
- Continue to develop the conceptual model, using it to identify key variables that determine outcomes;
- Create a centralized database for marine mammal information;
- Support development (by relevant resource agencies) of standardized reporting formats for data collection;
- Develop techniques for evaluating chronic impacts of sound (*e.g.*, stress);
- Use certain better-known marine mammal populations to test models and develop techniques;
- Assess the likelihood of adverse effects on populations (*e.g.*, using a precautionary management approach such as the potential biological removal (PBR) system used under the Marine Mammal Protection Act); and
- Improve the use of the PBR model in management to reflect cumulative impacts and total losses from all sources of mortality.

Dr. Wartzok noted that the PBR model has been used successfully for regulating the impacts of fisheries on marine mammals, and might be extended to address cumulative impacts of other human activities, including sound production. The panel developed a scheme of injury and behavioral “take equivalents” that would be used to equate sub-lethal effects with one “take” under the PBR scheme by using a “severity index” that estimates the fraction of a take experienced by one animal. This approach assumes that the primary effects of harassment involve lost energy, time, and opportunities (*e.g.*, to feed), and that the severity index would be higher for activities taking place during a critical time or at a critical location (*e.g.*, in breeding habitat). The web-based intelligent system proposed by the panel would incorporate this new PBR-based scheme with the NMFS Noise Exposure Criteria currently in development. An expert opinion panel would be used to initially develop the system. It would be expected that, initially, the system would reject most permit applications because of a lack of information, but gradually become more selective as it is systematically reviewed and updated regularly.

**Question:** A Committee member who attended one of the panel’s hearings expressed concern that the panel’s recommendations seemed to go beyond its stated task (*i.e.*, to review and characterize scientific understanding) by offering recommendations on how sound should be regulated or managed. Why did the panel (not a stakeholder group such as this Advisory Committee) choose to delve into policy?

**Response:** The panel realized that, given the current state of scientific knowledge, very little could be said about how to scientifically define biologically significant impacts of sound. It is not uncommon for NRC panels to delve into management. This study was funded by National Science Foundation, Minerals Management Service, National Oceanographic Partnership Program, and other groups that

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wanted guidance on “scientific management” of this issue. We did not attempt to define the “severity index” levels or describe how to go about expanding PBR. However, we felt it important to provide a road map for the next decade of research and shorter-range guidance, including three ways to address the problem in a scientific manner.

**Question:** Were animals such as right whales, which may suffer secondary effects from sound, considered as experiencing population-level impacts?

**Response:** We do not know of any marine mammal populations that have suffered major collapses since the end of commercial whaling, although some populations have not recovered. The scientific literature we reviewed showed no evidence of biologically significant population changes in cetaceans due to noise. It’s important to note that population declines are easier to detect in pinnipeds than in cetaceans.

**Comment:** One member applauded the panel’s efforts to provide a mechanism to demonstrate population-level effects of sound in the future.

**Comment:** A member expressed concern about the panel’s preliminary observation that there is no evidence of population effects from sound and suggested that it would be more appropriate, and less misleading, to state that there is insufficient data to judge whether any such effects occur.

**Comment:** One Committee member noted that the panels’ report lacked an international perspective, focusing exclusively on the U.S. legal and management system. This is an international issue, and it would be useful to expand future efforts to include a more international view. The member also expressed discomfort with the report’s review of the scientific literature, especially with respect to using non-peer reviewed reports. In particular, a section describing an International Whaling Commission (IWC) paper related to Sakhalin Island was viewed as problematic.

**Comment:** Another member respectfully disagreed, stating that information such as that from the report related to Sakhalin Island is important and must be considered. While not peer reviewed in the strictest sense, it was rigorously examined by a prestigious international scientific body, the IWC.

**Comment:** One member noted that drive fisheries for marine mammals are an example of using sound to cause impacts (stranding and subsequent harvest by humans) that may have population-level effects. The report should have dealt more with acute impacts such as stranding, rather than focusing on chronic effects such as stress or habitat abandonment.

**Question:** Is it possible to submit comments on the report?

**Response:** That is not part of the NRC’s process, although you could write a letter to the NRC. The finalized report is available to the Advisory Committee as a resource for its discussions.

**Comment:** One member suggested that the panel should have taken into account the long history of strandings related to military activities in the Canary Islands. Spain has recently banned such activities in the Canary Islands. It was also pointed out that while scientists tend to concentrate on population-level impacts, it is also important to keep in mind that impacts on individuals are of great concern to the public. In addition, the PBR approach is not used outside the U.S., and so this report’s usefulness internationally may be limited.



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**Comment:** Another member disputed the characterization of Bahamas strandings as being long associated with sonar, pointing out that there are approximately 3600 stranding events reported in the U.S. each year, with less than 10 correlated to sonar.

**Comment:** A member expressed appreciation for the presentation, but noted being troubled by how behavioral impacts have been represented to the Advisory Committee in various documents and presentations. Characterizing such impacts as being of low-level severity is problematic, because some severe physiological effects seem to be triggered by behavioral responses to sound. Also, it is problematic to describe PBR as a successful approach in fisheries management when we continue to see fish populations crashing and significant problems with marine mammal bycatch in commercial fisheries. It has not worked well for fisheries, and would be difficult to apply broadly to an issue as poorly understood as sound. The PBR approach requires a much more thorough understanding of populations than we currently have in most cases.

**Comment:** A member expressed concern that the panel did not consider recent efforts to evaluate the possible role of anthropogenic sound in declines of the southern resident killer whale population in the Pacific Northwest region of the United States. Sound is being considered as a possible contributing factor in that decline, particularly in the context of ship traffic and whale watching activities in the area.

**Response:** The panel did not make any forward-looking speculations about such ongoing work.

**Question:** Several members felt that the best example we have of a population-level effect from sound is that of the 2000 Bahamas stranding event. Did the panel examine that event?

**Response:** The panel used a broad approach in considering the severity of impacts, and would support treating Cuvier's beaked whales differently on a detailed basis when determining a severity index. The panel was not attempting to establish exact parameters for any specific group of animals, and urges careful use of the conceptual model. For beaked whales, behavior seems to play a significant role in the mechanisms of impacts. When developing the recommendations on PBR, the panel did not consider the fisheries approach, but rather PBR as a way to determine safe take levels for populations. Many factors beyond bycatch should be considered in PBR. We also looked at the Revised Management Scheme of the IWC, which makes a similar attempt to integrate multiple types of impacts. While the panel focused on the problem within the U.S., it considered the full range of literature. However, we did not examine the Bahamas incident specifically because it could not be determined whether the animals involved were part of a well-defined population.

**Question:** The panels' work should be applauded as a constructive attempt to integrate science and policy, which is a politically sensitive undertaking. What were your recommendations with respect to controlled exposure experiments (CEEs)?

**Response:** The panel recognized that CEEs may be the best way to understand the reactions of animals and the dose-response mechanism. The Marine Mammal Commission's beaked whale technical workshop also produced unanimous recommendations on CEEs.

### **Review and Discussion of Proposal from Working Group on Research Permitting and Incidental Harassment Authorizations**

Working Group Chair **Nina Young**, provided a brief overview of the draft recommendations developed by the Working Group. She noted that the Working Group was able to reach agreement

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on most of the draft, and that areas where they were unable to achieve full agreement were reported in bracketed text. The Working Group agreed to present this draft to the Committee as a point of departure for their consideration and discussion, particularly with regard to the bracketed section. The Draft Recommendations for Improving Scientific Research Permitting and Incidental Harassment Authorization Processes can be found in Attachment C.

- Advisory Committee members provided the following overall comments: One Committee member who was on the Working Group noted most of what is included is not necessarily new and is already under consideration by NMFS in their streamlining efforts. However it was difficult to come to agreement on the recommendations that go beyond current efforts, hence the bracketed section on recommendations regarding changes to the regulatory regime for the permitting process.
- One Committee member commented that the research community is viewed as the “low-hanging fruit” when it comes to regulating sound and its potential impacts on marine mammals. It is a well defined community that is easy to regulate, but represents an insignificant fraction of the sound that is produced in the oceans, the rest of which is virtually unregulated. This is at the root of the frustration of the research community on this whole topic.
- Several Committee members stressed that the permitting process is a critical barrier to accomplishing the very research needed to understand the impacts of sound that will enable better protection for marine mammals. Others emphasized that research activities still need to be regulated to ensure protections for marine mammals.
- One Committee member from the research community applauded the effort to develop recommendations to streamline the permitting process. He noted that early in his experience, he learned to live with the fact that it would take three months to get a permit. However, now it is much more difficult, and it has taken as long as nine months to get a permit for a benign, non-controversial research effort. There is real concern about implications of this process for recruiting new scientists to work in this field of study.
- Another Committee member commented that we must not lose sight of a key aspect of this: that research is essential to improved protection and conservation efforts. We need to enable marine mammal research to continue at an accelerated rate. He stressed that human activities will continue to increase and marine mammals will come under increased threats that we don’t yet understand. He highlighted the need to beware of the unintended consequences of hindering of research that can help us to protect marine mammals.
- Another Committee member noted that not all research projects are benign, and that while it is a worthy goal to streamline the process so that it does not create serious barriers to important research, it must maintain mechanisms to ensure protection of marine mammals. There is a reason why we have the permitting process in the first place. In response, a member from the research community emphasized that they agree that protections should be retained, but noted that much greater protection could be achieved by regulating activities that produce much more sound in the oceans. The application of protective regulations should be more evenhanded.
- A Committee member posed the question of whether there is consensus among Committee members that the permit system should be streamlined. Committee members indicated that there is consensus on this point.
- One Committee member urged the Committee to include the U.S. Fish and Wildlife Service when considering recommendations for changes to the regulatory process, not just NMFS.

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- One Committee member expressed concern regarding the recommendation to allow for multi-year incidental harassment authorizations (IHAs), noting that the one-year limit and requirement for reapplication is a good way to support adaptive management. Another member countered that a benefit to multi-year IHAs would be in making it easier to conduct cumulative impact analyses. Others expressed the belief that adaptive management might in fact be better implemented with 5-year IHAs where it is more likely that patterns that emerge could inform the need for and focus of adaptations.
- There was more extensive discussion of the bracketed text in the section on “Changes to the Regulatory Regime for the Permitting Process.” Members of the Working Group explained that the bracketed text reflects an attempt to articulate a difference of opinion over whether or not to recommend a full endorsement all of the relevant recommendations of the NRC. The Group did agree to a recommendation calling for NMFS to conduct a review and analysis of all of the past NRC recommendations related to this topic, as well as those of other groups, and to establish a process involving stakeholders in determining what steps to take with regard to changes to the permitting process. Additional points made by individual Committee members are summarized below. The NRC recommendations generally do not identify who should act on the recommendations or how to go about it. It seems reasonable to recommend that NMFS and the U.S. Fish and Wildlife Service examine these and other recommendations in relation to what they are currently doing with their permitting processes. The real controversy is over what these agencies might do after conducting the analysis.
- Several different suggestions were made by various Committee members to delete selected paragraphs of the rationale section, or to add language to the recommendation language itself. Some felt that the rationale is important to include as an explanation to Congress of the concerns leading to the recommendation, and others expressed support for including an explanation of the differing views. One member suggested that it be left as it is until the Committee has had a chance to see what other potential pieces of the final report might look like. It also provides a good example of an effort to agree on language that describes a difference of opinion among Committee members.
- One Committee member objected to removing the brackets from this section of text on the basis that it is not sufficient to describe the NRC recommendations without some discussion of what is considered to be controversial about them (*e.g.*, our ability to define biological significance and a *de minimus* standard).
- One member urged the Committee to focus on the fact the important part of this recommendation is that it calls for a review of permitting process recommendations within six months and argued that the Committee should not get bogged down by disagreement about the rationale.

It was agreed that for the time being, the brackets will remain around the two paragraphs of the rationale section until it can receive additional discussion.

Another section that received focused attention was the recommendation calling for all stakeholders to engage in educating the public about research affecting marine mammals (third bullet in the section on “Funding, Education and Technology”). Committee members raised several concerns and comments, described below.

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- One Committee member felt that this recommendation is stated too strongly, explaining that while we should all strive to communicate and dialogue, it is not realistic, nor necessarily appropriate, to state it as a responsibility.
- Another Committee member noted that the emphasis should be on agreeing to try to educate without inflaming; to work together through honest discourse instead of litigation or other means to bring the issues to public attention. The recommendation does not mean to suggest that we edit each other's material intended for the public, since we characterize the problems differently. Still another member noted that it would be a mistake to think that all stakeholders in the group can speak with the same voice on everything.
- A member of the Working Group noted that they had discussed how the NMFS lecture series, as an example, would have been better if a wider range of stakeholders had been meaningfully involved. She stressed that collaboration on outreach materials such as basic fact sheets would be very valuable. Another Committee member suggested that the report of the Subcommittee on Synthesis of Current Knowledge could provide a basis for some of this kind of material. The concept of "fact sheets with buy-in" is an appealing one.
- A Committee member expressed the opinion that the research community should educate the public regarding the risks, as well as the benefits, of their research. Another Committee member responded by raising the concern that the conservation advocacy community not be held to a lower standard with regard accuracy in their outreach and education to the public.
- Committee member Marty Kodis informed the group that the U.S. Fish and Wildlife Service (USFWS) has been working on comprehensive recommendations on education and outreach that they offered as a starting point for the Committee's discussion of this topic. A two-page draft prepared by USFWS was distributed later in the meeting and it was agreed that Committee members should submit comments to Marty Kodis, who would revise the document for further Committee consideration (see Attachment D).
- It was agreed that brackets would be placed around this recommendation so that it can receive further attention by the Working Group and other interested Committee members.
- Later in the meeting, Committee members returned to a discussion of outreach and education and the following suggestions were made:
  - One member recommended removing this from the permitting discussion, since the need for outreach and education and communication is broader than just the permitting process. Another member agreed and suggested it could be a stand-alone recommendation.
  - Committee alternate Dan Costa recommended that the topic needs to be expanded and modified, particularly with regard to the academic education component. He agreed to develop a draft recommendation.
- Later in the meeting, a member requested that the issue of permitting for CEEs be included in the permitting section. Others objected to singling out one particular type of research in the permitting section, arguing that there isn't a problem specific to CEEs in the permitting process. One suggestion was that CEEs could simply be included as an example. It was agreed that the Working Group would discuss this on a conference call before the next Advisory Committee meeting.

In summary, Lee Langstaff noted that while there was extensive discussion on a few parts of this draft, the Committee agreed on most of the proposed recommendations. The Committee agreed with the

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Working Group's proposal except for (1) the rationale for the recommendation on analysis and a stakeholder process for implementing recommendations from previous efforts, (2) the multi-year IHA recommendation (both in the section on "Changes to Regulatory Regime"), and (3) the rationale for the education and outreach recommendation (in the 3<sup>rd</sup> bullet under "Funding, Education and Technology" section). For the most part, the work of this Working Group is completed. Any additional written comments should be submitted to the facilitators (by December 10), who will integrate the comments into the draft product for discussion at the next plenary meeting. In addition, the Working Group members will hold a conference call to review the facilitators' revisions and to consider whether specific attention to CEEs should be included in the permitting section.

### **Presentation of NMFS OnLine Permitting Application System**

**Steve Leathery, National Marine Fisheries Service (NMFS)**, provided a brief description of the new online permit application system that is part of NMFS's efforts to streamline the permitting process. He explained that it is expected to be operational in 2005 and will initially be for research permits only. It will be expanded to include IHAs in the future. NMFS believes that this online application system will be more transparent, will enable better tracking of permit applications, and will reduce the number of Freedom of Information Act requests and the time needed to respond to them. NMFS wants to have a few researchers familiar with the permitting process to test it out before it is up and running. Anyone interested in testing the current "beta" version of the on-line system should contact Carrie Hubbard at NMFS. In response to questions, Leathery noted that an applicant does not have to have funding in place before applying for an application. It is not clear yet how this system will coordinate with state governments and other agencies. The system uses automatic email prompting, and communication with the appropriate agencies could be triggered in a similar way when geographically appropriate. The system could prompt either the applicant or NMFS to interact with state agencies at specific points in the process. Committee members expressed general support and appreciation for this effort.

### **Review and Discussion of Product from Working Group on Animal Welfare Ethics**

**Erin Heskett, International Fund for Animal Welfare**, the co-chair of the Working Group on Animal Welfare Ethics with Peter Tyack, introduced the document prepared by the Working Group for Committee review. He noted the document is a draft in progress, but that much work has gone into its development. The work group focused on controlled exposure experiments (CEEs) and auditory brainstem response (ABR) testing. He highlighted a few areas where additional work on the draft report is needed: the pros and cons of CEEs can be spelled out more clearly, the placeholder for a section on experiments in which animals are temporarily captured needs to be filled with text, and language needs to be drafted that describes animal welfare groups' participation in developing ethical guidelines without endorsing CEEs as techniques *per se*. He also noted the need to describe more clearly the balancing criteria for determining acceptable risks to individual animals as compared to overall benefits to populations.

Advisory Committee members made comments described below.

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- Several Committee members applauded the Working Group for its efforts to tackle a difficult subject, and noted the high level of cooperation that helped create the Working Group report.
- A member noted the need for more details concerning when CEEs are appropriate, and suggested that methods to evaluate the risk of the technique should be considered. This member noted that experiments should be focused to produce the least risk, if the CEE technique is used.
- Several members noted the need to explore all alternative techniques and gather background information with other methods before undertaking a CEE.
- Another noted that CEEs need to be timed well and designed so that they are likely to get the best information for the least exposure of marine mammals to sound, and that they be designed to test clear hypotheses and maximize research results from each exposure. Others noted that CEEs are important if scientists are to gather the knowledge needed to protect species and use an adaptive management approach in the permitting process.
- One member commented on the proposal for advisory panels to review CEEs that may involve a certain level of risk, noting that the panelists would need to have a high level of expertise and understanding about the balancing needed to use this technique.
- Another member requested that a statement be added in the report to make clear that various guidelines already exist for animal welfare and ethics issues, both in the U.S. and internationally.
- Regarding the guidelines for ABR techniques, several members made the point that it might be useful to develop guidelines concerning when this technique should be used with live stranded marine mammals. A suggestion was made to combine the judicious use of ABR with normal stranding response team procedures. The question of whether to delay euthanizing a stranded marine mammal to allow an ABR to occur was raised, with differing opinions. Some noted that dying animals would not provide data appropriate for extrapolation; others noted that any data obtained would be better than having no data. The discussion concluded with a suggestion that the annual NMFS stranding network meeting, planned for spring 2005, include a discussion of the appropriate use of ABR in stranding response. Paul Nachtigall agreed to work with NMFS to develop a presentation and guidelines for discussion with the stranding response teams. It was also noted that the issue of euthanizing stranded animals is in the hands of the veterinarians on stranding response teams, and is beyond the scope of the Advisory Committee's concern with animal welfare ethics.
- One environmental group representative noted that cooperating on guidelines for CEEs posed several challenges for his group, because guidelines developed for the U.S. where there is a permitting regime might be used by researchers in other countries where there are no permitting systems and where the guidelines might be misused. Other environmental group representatives noted their desire to work collaboratively to produce a useful guide without endorsing CEEs. They agreed to continue to work to create a draft that they will feel is a positive step forward.

The next steps for the Working Group include reviewing written comments from Advisory Committee members, revising the draft report to incorporate those comments, and discussing the revised draft in a conference call to finalize the document. Written comments should be sent to Erin Heskett, Peter Tyack, and Suzanne Orenstein by December 10.

**Review and Discussion of Product from Working Group on Integrity and Balance in Research**

The Working Group on Integrity and Balance in Research (to be renamed Work Group on [Research Ethics or Perceived Bias] in Research) reviewed its draft background paper with the Advisory Committee. Working Group members and the facilitator clarified that areas in which the group could not agree had been deleted from the draft, so the draft before the Committee was not complete, but did present the issues and language that the Working Group could agree to forward to the Committee. Key points made by Advisory Committee members are summarized below.

- Integrity is not the right word to describe the issue this Working Group is addressing. Perhaps “perceived bias” should be used in the title, or “transparency.” (The Working Group agreed to work towards agreement on a more appropriate term.)
- A member expressed the view that integrity is a concern for stakeholders, not just researchers or research funders. Perhaps the background paper should be broadened to address all interest groups. Others noted that the problem is the result of the Navy being the most significant funder of marine mammal research, and the perception that Navy funding could influence what questions are researched and how findings are interpreted.
- Others noted the need to have a statement of the problem in the background paper, to clarify how the proposed solutions address the problem. Working Group members clarified that they had difficulty reaching agreement on such a statement. At the end of the discussion, the Committee charged the Working Group to develop a description of the problem or concerns.
- Another member suggested that the structure of the funding system be included in the description of the problem.
- Several members noted that the proposed solutions – diversification of funding, cooperative research among multiple funders, advisory boards, and expert panels – were all good ideas, and should be supported regardless of whether the Working Group could agree on a description of the problems.
- Several members noted that the research funding support provided by the Navy was a positive and beneficial effort, and they could accept that their goal of national defense will play a role in determining the Navy’s research agendas.
- One member noted that there is no evidence that bias from funders is an issue in the marine mammals and acoustics arena. Another member from a funding entity noted that the science community has integrity on this issue, but the funders and the researchers need to be open to scrutiny, just as all institutions should be.
- One member expressed the view that it is not wise to use Committee time and resources on this issue, and that all interest groups should be held to the same standards of transparency and disclosure.
- One member noted that this issue is not limited to sound and marine mammals; it is a broader issue. She suggested the Advisory Committee acknowledge the issue is on the table and come up with ways to address it. She noted that conflict of interest does not imply lack of integrity. Rather, identifying conflict of interest preserves integrity. She further noted that the ability to conduct mission-based research should always be preserved.

The Advisory Committee agreed to next steps described below.

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- The Working Group will develop a draft description of the issues and concerns. Michael Jasny and Mardi Hastings agreed to work together to produce a draft for the Working Group to consider in a conference call.
- The background paper should be revised to combine the draft description of the concerns with the suggested solutions. (Some Working Group members argued to keep the additional language that had been agreed upon, but a decision on that issue was deferred.)
- Several members noted materials that are in press on this topic and offered to obtain them for the Committee. The materials include a letter addressing ethics and research funding concerns from Damon Gannon *et al.* to the Society for Marine Mammalogy, ethics guidelines being considered by the Society for Marine Mammalogy, and draft ethics and integrity guidelines being developed for the Journal of the Acoustical Society of America. These materials will be circulated to the Advisory Committee by Dan Costa, Mardi Hastings, and Erin Vos.

### Update from Subcommittee on Synthesis of Current Knowledge

**Paul Nachtigall, University of Hawaii**, provided a brief update on the status of the work of the Subcommittee on Synthesis of Current Knowledge. He began by reviewing the charge to the Subcommittee and the vision for its product, both of which were discussed and agreed to by the full Committee at its second plenary meeting (February, 2004). He reminded Committee members that the Subcommittee's product is not intended to be a comprehensive scientific product. Rather, it is to identify what information is needed to address acoustic impacts on marine mammals, and to translate existing information into a form that is accessible, useful, and informative for a non-academic target audience of Congress and management agency and congressional staff. The objective is to make summary statements regarding current knowledge that clarify what is agreed to be known, what key areas of uncertainty are, and what areas of scientific disagreement exist. (Presentation available at <http://www.mmc.gov/sound>.)

Since the July plenary meeting, the Subcommittee has met twice to revise its draft document in response to direction from the full Committee, including significant revisions for scientific accuracy and scrubbing for policy-related language or bias. In addition, the Subcommittee has been developing a new section on strandings and beaked whales and is working to ensure that references are complete, correct and accurate. The revision work is not complete, and the draft document does not yet reflect the consensus level of quality desired for distribution to the full Committee.

Dr. Nachtigall explained that the Subcommittee needs additional time to bring the document to the point that all Subcommittee members support distributing it to the full Advisory Committee. He presented the following proposed timeline for completing the Subcommittee's work:

1. Hold a 3-day Subcommittee meeting to complete current round of Subcommittee comments and revisions on January 18-20;
2. Send the resulting draft out for external editorial review in late January to late February (proposed reviewers: D. Wartzok, R. Reeves, J. Richardson, S. Moore, and J. Mead);
3. Subcommittee members meet to consider and address reviewer comments and finalize the draft on March 1-3; and
4. Send the final draft to the Advisory Committee in mid-March for its review and discussion at the next plenary meeting.



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Lee Langstaff invited Committee members' reactions to the Subcommittee update and proposal for completing its work. Committee members provided comments and questions, summarized below.

- Several Committee members expressed support for the proposed schedule for the further development of the Subcommittee's product, and it was accepted without objection.
- Several Committee members questioned the implications of the Subcommittee's new timeline for the Advisory Committee process overall. David Cottingham noted that the full Committee should probably not meet until it has received the report of this Subcommittee (and also that of the Subcommittee on Management and Mitigation), and that this would mean that the full Committee would will not meet until sometime in April, rather than in March, as previously planned. It also suggests that an additional sixth plenary meeting will be necessary, since it is not realistic to expect to get agreement on a final product at that April meeting. While there was general agreement on these observations, a final decision regarding the timing for the fifth and possible sixth meetings was deferred until later in the meeting.
- A Committee member requested that a person with beaked whale and stranding expertise be added to the possible list of reviewers for the Subcommittee's draft document and nominated Jim Mead. A Subcommittee member emphasized that the proposed list of reviewers was not set in stone and this suggestion was welcomed. However, another Subcommittee member noted that the review is not intended to be akin to an expert peer review, but more of an editorial review by respected individuals who are well-versed in this topic.
- In response to a request by a Committee member that the Subcommittee's draft be circulated to the full Committee at the same time it is sent to reviewers, several Subcommittee members suggested that this would complicate the process of getting a consensus draft from the Subcommittee, particularly in the desired time frame. The process of trying to address the reviewers' comments and another round of Committee members' comments at the same time would be extremely difficult. Subcommittee members expressed a preference for waiting to submit the report to the Committee until after they incorporate the feedback from the outside review process, and Committee members agreed to proceed accordingly. However, David Cottingham did note that Subcommittee members can and should consult with their caucuses and constituents and to share draft text or questions regarding the draft as appropriate as the report evolves.

In closing, Lee Langstaff reminded Committee members that the Subcommittee had also been asked by the Advisory Committee to compile a list of the research recommendations from other processes and groups (identified by both Advisory Committee and Subcommittee members). This list was compiled by Marine Mammal Commission staff and roughly organized according to the table of contents of the Subcommittee's report. This compilation was provided to Committee members by email in advance of this meeting. Ms. Langstaff pointed out that this list includes widely varying levels of specificity and also includes some non-research recommendations. In preparation for discussion on day three, Ms. Langstaff asked Committee members to think about what the Committee should do with this information, and specifically to consider whether they envision that the Committee will develop its own research recommendations, or if it wishes to provide consensus criteria for prioritizing research, or to take some other approach.

## Public Comment

The comments of four meeting observers are summarized below.

**Michael Stocker, SeaFlow.** There is a lot of good energy and effort by this group. This issue of science being perceived as tainted by funding sources or disingenuous inquiry is a real challenge. The science is driven by needs, not by human inquisitiveness, and the priorities of Committee members are military technology and dollars. This affects which questions get asked. We have a long history of military technology driving science. This is not surprising. Major funders don't have the incentive for conducting a broader inquiry – this is not necessarily wrong but it does leave big gaps. Non governmental organizations (NGOs) do not have the resources, nor the huge economic incentive, to conduct their own research. With regard to accusations that NGOs are perceived as attacking the intent of scientists, it is important to note that they are frustrated at not having serious input into what needs to be funded. NGOs want a place at the table in determining the priorities for science on this topic. We would like to see more funding go to looking at synergistic effects and the effects of saturating the ocean environment with noise. But those currently funding the science have different priorities. Both the Pew Oceans Commission report and the U.S. Commission on Ocean Policy report remind us of the need to try to preserve the health of the oceans overall, and we should be considering how we can contribute to that objective

**Mac Hawley, Hawley Family Foundation.** I would like to share three ideas and some information regarding noise source reduction, one each for the three major players in noise production. First, the Navy has spent a lot of research and development resources on stealth ships that use quiet propeller technology. This technology could be shared with the commercial shipping and ship building industries, and I want to encourage the Navy to share and, as necessary, declassify this technology. Second, for the oil and gas industry low frequency pulse technology on the ocean floor may be an effective technology to replace or supplement seismic surveys. While it may have its limitations, particularly in not being as readily moved around, it is one example of an opportunity to displace the seismic technologies of concern. Third, the Navy should be encouraged to look at Defense Advanced Research Projects Agency studies involving non-sonar acquisition of information including detection of live targets using unmanned buoys and satellite technologies.

Finally, we should recognize and celebrate that in at least one case, through the work of Denise Hertzing, we can establish normal behavior patterns for marine mammal populations in the wild. She has studied one population for twenty years – three generations – and has over twenty thousand hours of video documenting normal behaviors.

**Ben White, Animal Welfare Institute.** This group remains very compartmentalized. The value of a forum like this is to hear ideas from each other and to consider the issues from outside traditional domains and interests. Historically, treatment of this topic has not been open and a great deal of the extant lack of trust has resulted because the public has not been given the benefit of the doubt regarding being smart enough. In my own struggle to understand this issue, I believe that intense sound is a significant contributor to the current plight of the oceans. A compartmentalized approach, coupled with turf protection with respect to this issue, creates a barrier to addressing it. I urge Committee members to consider this problem from outside your own individual or institutional domains from time to time, and to be open to having your own perspectives changed. The status quo is not a solution, and without being open to changing behaviors, the process will fail.

## Plenary Four Meeting Summary (April 1, 2005)

**Lindy Weilgart, Dalhousie University.** The input required to implement the NRC's proposal on biologically significant marine mammal behaviors is almost entirely absent, and will be for the foreseeable future, which is acknowledged in the report. Why does the panel feel it is legitimate to delve into policy where mistakes can affect real animals rather than just be confined to scientific disputes in academia? One could have honestly acknowledged that marine mammal science isn't going to provide the necessary answers over the short-term, and if you want to delve into policy, then look at mitigation instead, like technological developments (quieting technologies), area and seasonal closures, etc., as an immediate measure in the meantime. That would be more precautionary in my opinion.

The statement that there are no population declines in marine mammals due to noise is scientifically indefensible without also saying that significant population declines in most cetaceans are undetectable unless very severe indeed, and that it would be very difficult to isolate noise as the only threat causing those declines were they detectable. I think that we'll find that the more we look, the more we'll be surprised at how subtle visible observable effects translate into something like decreased reproductive success. These sorts of statements reduce confidence in, and the credibility of, the NRC panel process.

To say, as has been claimed here, that it is unscientific of the public to extrapolate from the effects of mid-frequency sonars to other sonars is false, in my opinion. It is perfectly valid and sensible, in a precautionary way, to be concerned about other sonars until such time as can be proven that the many overlapping characteristics between mid-frequency sonars and other sonars are not the damaging characteristics. Thus the public has a scientifically valid, logical point.

In general, in this Committee, I am struck that my colleagues (the researchers, in particular) seem to be out of touch with the public. The public, as can be seen from the comments that are passed out, is generally unwilling to embrace the overwhelming importance of science to the potential detriment of marine mammals. Scientific research does need to be regulated, even marine mammal research, if it adds to yet more noise to marine mammals' environment and also when it targets whales specifically. Finger-pointing about who most targeted by regulation is not very helpful. Getting permits for benign research that benefits marine mammals, like photo identification studies, however, should be vastly easier on the applicant in order to encourage science without detriment to the animals.

### **DAY THREE – Thursday, December 2, 2004**

Suzanne Orenstein began by reviewing the outcomes from the previous day and the agenda topics for this last day.

### **Research Recommendations and Criteria for Prioritization of Scientific Research**

Lee Langstaff began this session by reminding Committee members of their preliminary brainstorming to identify criteria for prioritizing research at the San Francisco plenary meeting in July. She described the goals of this session as being 1) to determine whether there is convergence on criteria for prioritizing research, and what next steps the Committee wishes to take in developing and seeking

## Plenary Four Meeting Summary (April 1, 2005)

consensus on criteria, and 2) to explore ideas about how the Committee envisions addressing research needs and recommendations in its report.

### Discussion of Criteria for Prioritizing Research Recommendations

Ms. Langstaff asked each Committee member to take a few minutes to write down the three research prioritization criteria they believe to be most important – either drawing from the list generated at the San Francisco meeting, or bringing new ideas to the table. Members then shared their top criteria and a new list was generated that attempted to capture overlap and to see how many different members nominated the same criteria. The new list, which can be found in Attachment E, highlighted the beginning of convergence around some criteria, in particular the following criteria (the numbers in parentheses indicates the number of Committee members who included it in their top three):

- Relevance to improving management decision-making (18);
- Contribution to baseline knowledge (7);
- Yields results applicable to the protection and conservation of marine life (7); and
- Increases the understanding of potentially significant but understudied effects (4).

In discussing the list, which included a total of at least 30 other criteria, Committee members felt that it did not accurately represent where there might be convergence. Some members pointed out that many of the criteria are closely related and could be combined or better articulated. It was suggested that a small group make take on the task to work with the list to refine it, and then bring it back to the full Committee for a multi-vote to see which criteria really rise to the top. It was agreed that a small group will work to revise the list accordingly. Volunteers included Nina Young, Penny Dalton, Dan Costa, and Erin Vos. Lee Langstaff will distribute the revised list to Committee members for review and comment and then coordinate a multi-vote process by e-mail to develop a revised list of the criteria for Advisory Committee discussion at the April plenary meeting.

### Discussion of How to Address Research Recommendations

- Building on the discussion of criteria for prioritization of recommendations, Ms. Langstaff asked Committee members to shift the discussion to ideas for how they might envision handling research recommendations in the final report, reminding them to consider what could be uniquely influential coming from this particular group. The suggestions and comments offered are summarized below. Several Committee members recommended finding a way to endorse or support the research recommendations from the previous NRC reports (and some other reports) on this topic and to add some of our own.
- One member suggested that the Committee not make specific recommendations for research topics, but endorse NRC recommendations coupled with an agreed on set of criteria for prioritizing research.
- Another member suggested that the Committee highlight the research that is needed now, most urgently, and to attach estimated price tags to it, in addition to endorsing previous recommendations and identifying priorities.
- One member called for identifying four major categories of needed research and describing the respective concerns of different stakeholders under each; and also discussing the budgetary implications of each.

## Plenary Four Meeting Summary (April 1, 2005)

- One member suggested that it makes most sense to direct Congress to broad and general areas for research, not provide a long shopping list. This could focus on the areas where there is overlap of recommendations from other efforts with those of the Advisory Committee.
- One member commented that the federal government is not good at tracking research dollars across agencies by topic, so we don't really know how much is being spent in government on various related research topics.
- Another member suggested that it is more appropriate for government to do the broader research, noting that industry in particular will continue to focus on mission-based research. He went on to say that describing the values and concerns of different stakeholders, especially with regard to concerns about invasive research techniques or areas to avoid, would be very helpful.
- One member proposed a three-part approach:
  1. Acknowledge the body of previously described research recommendations (*e.g.*, NRC and others);
  2. Try to categorize those recommendations into broad categories (perhaps using the headings in the Subcommittee on Synthesis of Current Knowledge report that have been used to "organize" the recommendations from other sources), with broad themes under each heading; and
  3. Identify this group's top criteria and either apply them to see what major areas of research rise to the top, or use the criteria in conjunction with the major themes to consider thematic recommendations.
- Several members expressed support for using the table of contents of the Subcommittee on Synthesis of Current Knowledge report as a structure for research recommendations and somehow coupling it to key criteria the Committee can agree on.
- A few members urged the Committee to explore focusing on providing a guiding framework for building research programs to accomplish the needed research, rather than on recommending specific research topics, since these may change over time.
- Several members urged the group to further develop and clean up the compiled list of research recommendations and find a way to incorporate it into the report (as an appendix, at least). However, others felt that it would be better to make reference to all of the sources of those recommendations but not include this very long list.
- One member emphasized that an overall goal here is to provide Congress with our best thinking on how to get the knowledge needed to answer the key questions.
- Another member noted that we are working with two pieces: specific research topics, and criteria for prioritizing them. The report needs to identify at least some research topics, and these should flow logically from the Subcommittee on Synthesis of Current Knowledge report's framework of what is known and unknown, and it should also flow from the management and mitigations needs. It is logical to flow from 1) where we are, to 2) where we need to be, to 3) how we recommend getting there. He acknowledged that this is a big task. Others indicated that this is an appealing approach, but it would be more doable (from a time and practicality standpoint) if we use the table of contents and broad themes approach, with criteria to guide decision-making.
- One Committee member pointed out that initiatives get funded one of two ways: 1) through Congressional earmarks or 2) through initiatives within the research community. Our report should try to influence both mechanisms.

## Plenary Four Meeting Summary (April 1, 2005)

Following this exchange of ideas, the group agreed to a process for moving forward. Erin Vos will continue to refine the compiled list of research recommendations from other efforts, with assistance from Paul Nachtigall, Gerald D'Spain, Mardi Hastings (or Bob Gisiner), Bill Lang, Lindy Weilgart, and others who are nominated or wish to participate. The focus will be on pulling together similar recommendations (on the same topics), using the overall headings and structure of the Subcommittee on Synthesis of Current Knowledge report's table of contents and identifying broad themes under each heading. The various sources from which the recommendations come will continue to be tracked. She will send the revised draft to various topic experts to review for accuracy, etc. Any Committee members or alternates interested in reviewing specific topics, or wishing to nominate other reviewers, should notify Ms. Vos by e-mail by December 17.

At the next plenary meeting the Committee can consider both the criteria and major themes for research needs and then determine how to utilize them in determining what form its recommendations will take with regard to research.

### **Final Report Outline**

Suzanne Orenstein invited Committee members to provide comments and suggestions on the outline of the Committee's final report. The suggestions and comments offered are described below.

- The following comments were made regarding the introduction:
  - One Committee member felt strongly that the introduction should include a brief description of the context of how sound impacts relate to other impacts on marine mammals. Others argued that we don't know enough to assess the relative impact of sound and that since the charge to this group is specifically to consider the impacts of sound, we should not attempt to diminish its importance by pointing fingers at other impacts. The original commenter noted an unwillingness to sign on to a report that does not make some statement about this broader context and offered to draft language for consideration by the Committee.
  - Another member suggested that the introduction should provide some history of the issue and the Congressional mandate that lead to this Advisory Committee. It should also include some context with regard to how sound is used in the oceans.
  - One member requested that drive fisheries be included in any description of the human uses of sound in the oceans in the introduction.
- A member recommended that the "State of Knowledge" section in the draft outline be revised to reflect the structure of that Subcommittee's document. This was agreed, but another member noted that the original draft also intended to include in this section some discussion of technology, such as the tools needed to get the desired science answers. He noted that he is not sure if it still needs to be a part of the report but we should at least consider it. Ms. Orenstein noted that some of this is discussed in the mitigation sections. Another member suggested that technology be addressed in the context of barriers to research, as it is deserving of at least a brief statement in that context.
- One member requested that the research integrity/ethics issue be added to the section on research issues.
- Another member felt that the term "barriers to research" is not the best term to be used in the report's outline.

## Plenary Four Meeting Summary (April 1, 2005)

- A member noted that mitigation should emerge as the “pearl” of the management & mitigation sections.
- There were several comments regarding how the report will address the international dimension:
  - One member urged that a clearer vision for the international section is needed;
  - Another noted that more discussion is needed regarding how much weight to give the international component in the report;
  - One noted that the international piece should not sit in isolation from the rest of the report; and
  - Mark Simmonds offered to work on drafting a section on the vision for the future in the international arena, and Steve Tomaszewski offered to work with him.
- Regarding the Executive Summary, various Committee members made the following suggestions:
  - Groups working on drafting different sections could pull out, or draft, relevant paragraphs, including recommendations, for the Executive Summary;
  - Use the NRC reports as a model – pull out the major recommendations from the various sections and leave the detail in the body of the report; and
  - The Executive Summary must be substantive without being too long.
- There was general convergence regarding how the report could handle Recommendations: it was suggested that recommendations should appear “embedded” throughout the relevant sections of the report, accompanied by supporting explanatory language, and that a summary of all recommendations comprise its own section (and/or appear in the Executive Summary). One member questioned whether this would include research recommendations (which will emerge from both the Synthesis of Current Knowledge section and the Management and Mitigation section), suggesting that it might make sense to deal with all research issues after both of those sections.
- In discussing the desired length of the report, a Committee member suggested that we assume the report is the combination of the chapters being developed and let the length be what it will take to accommodate those chapters. There were no objections voiced in response to this proposal.
- There was some discussion of the order in which sections might appear and the overall flow and format of the report. It was suggested that a small group work on revising the outline of the report, based on the rough skeleton that has emerged here and input from the outlines of the Subcommittee draft reports. David Cottingham suggested the facilitators and MMC staff would be able to do this. Ms. Orenstein proposed the skeleton outline as follows, and there was general support for it:
  - Executive Summary
  - Introduction
  - Synthesis of Current Knowledge (*including recommendations*)
  - Management and Mitigation (*including recommendations*)
  - Research Issues (*including recommendations*)
  - International Issues (*including recommendations*)
  - Summary of Recommendations
  - Vision for the Next Decade

## **Plenary Four Meeting Summary (April 1, 2005)**

### **Dealing with Disagreements**

Several points were raised with regard to how the Committee will deal with disagreements in producing its report. Ms. Orenstein noted that a usual practice is to 1) strive for agreement, 2) in the face of disagreement, describe areas of agreement and disagreement, and 3) agree on a process for recording dissents.

- One member urged that the Committee should strive for as much agreement as possible.
- Another member recommended that any significant disagreements should be documented and we should agree on how they are described, including reflecting the diversity of opinions.
- One member recommended that the report should avoid suggesting majorities or minorities, and reflect differences by indicating that “some” thought this and “others” thought that, rather than saying “most/a majority” versus “a few/a minority.”
- One member suggested that if there is no agreement on something, it should not be included.

In addition, it was noted that consensus on any recommendations regarding funding for individual federal agencies could be problematic for agency Committee members to participate in, as would be recommendations to make changes to the Marine Mammal Protection Act. David Cottingham reiterated that, because the Marine Mammal Commission is a member of the Committee, the Commission will therefore by definition be a party to any and all points of consensus reached by the Committee. However, when no consensus is reached on a particular topic, the Commission may make its position known through a separate report or letter to Congress.”

### **Scheduling Future Meetings**

Committee members agreed to dates for the fifth and sixth plenary meetings. They will be April 19-21, 2005 and July 19-21, 2005.

### **Summary of Meeting Outcomes**

Suzanne Orenstein provided the following overall summary of actions and outcomes from the meeting:

1. Working Group on Permitting:
  - Agreed on most proposed recommendations.
  - Submit written comments to Langstaff/Orenstein (Friday, Dec. 10).
  - Additional discussion needed on rationale for analysis and stakeholder process for implementing recommendations from previous efforts, and for five year IHA recommendation (section on “Changes to Regulatory Regime”) and rationale for education/outreach (3<sup>rd</sup> bullet under “Funding, Education and Technology” section).
  - Facilitators will create next draft incorporating comments from Advisory Committee, for discussion at next plenary.
  - Conference call of the Working Group to review revisions and consider whether CEEs fit in (date to be determined).
2. Working Group on Animal Welfare Ethics:



## Plenary Four Meeting Summary (April 1, 2005)

- Written comments to Erin Heskett & Peter Tyack for reworking of background paper by December 10.
  - They will integrate comments from meeting and written comments to create another draft of background paper for review at next plenary.
  - Working Group conference call to work on revised draft per Advisory Committee discussion (date to be determined).
3. Work Group on [Ethics] in Research:
- Agreed to draft a short statement of the concerns and objections from all sides, change name of issue, and prepare version of background paper with statement of issue and proposed solutions. Mardi Hastings and Michael Jasny agreed to create draft statement of issue by end of January.
  - Written comments by Dec 10 to Suzanne Orenstein.
  - Circulate revised draft to Working Group.
  - Working Group to hold conference call to review statement of concerns and agree on revised product for distribution to Advisory Committee (date to be determined).
4. Subcommittee on Synthesis of Current Knowledge:
- Subcommittee to meet twice (Jan. 18-20, March 1-3), sending draft out for editorial review in between meetings (the Marine Mammal Commission will ask Sue Moore, Randy Reeves, John Richardson, Doug Wartzok, and Jim Mead to act as reviewers).
  - Draft report to be distributed to Committee by mid March for review and discussion at April meeting.
5. Management and Mitigation Subcommittee:
- Developed tentative agreement on goals for management system.
  - Facilitators will send out clean Draft 3 to Advisory Committee members.
  - Written comments to Suzanne Orenstein by December 27.
  - Subcommittee meetings on Feb. 7-8 and March 8-9.
6. Small group to revise draft language re: “precautionary approach” before next Management and Mitigation Subcommittee meeting (C. Gill, M. Jasny, N. Young, J. Ray, S. Wan, F. Stone, J. Wilson, D. Cottingham/E. Vos) (Date to be determined—Orenstein to arrange).
7. Research Recommendations:
- Small group to revise list of criteria for prioritizing research (Nina Young, Penny Dalton, Dan Costa, and Erin Vos).
    - Send to Committee members for review & comment (Langstaff will distribute).
    - E-mail “multi-vote” to develop new list for Advisory Committee discussion at April meeting.
  - Marine Mammal Commission staff (Erin Vos, with assistance from Paul Nachtigall, Gerald D’Spain, Mardi Hastings or Bob Gisiner, Bill Lang, Lindy Weilgart, others to be determined) to refine research recommendations from previous efforts and send to topic experts to check accuracy, etc.

## Plenary Four Meeting Summary (April 1, 2005)

- Volunteers interested in reviewing specific topics should notify Erin Vos by e-mail by December 17, 2005.
8. Final Report:
- Facilitators and MMC to revise draft outline and circulate for review.
  - Draft proposed language for vision re: international aspects to be drafted by Mark Simmonds & Steve Tomaszewski by Dec 27 (send to Suzanne for distribution).
  - Comments on draft recommendations for outreach & education to Marty Kodis by Dec. 17. Dan Costa to provide additional draft language.
  - Any additional draft recommendations – send to Suzanne/Lee who will track them and develop master list.
9. Scheduled subcommittee and plenary meetings for future:
- Fifth plenary meeting: April 19-21, 2005.
  - Sixth plenary meeting: July 19-21, 2005.

## ATTACHMENTS

- A. Fourth Plenary Meeting Participants and Attendees
- B. Subcommittee on Management and Mitigation Draft Discussion Paper on Management and Mitigation Policy Issues
- C. Draft Recommendations from Permitting Work Group (Nov. 22 Draft)
- D. Draft Recommendations for Outreach, Education and Communication
- E. List of Criteria for Prioritizing Research

## ATTACHMENT A

### Attendance at the Fourth Plenary Meeting of the Advisory Committee on Acoustic Impacts on Marine Mammals

November 30 – December 2, 2004

New Orleans, Louisiana

#### Committee Members and Alternates (39)

Dan Allen	ChevronTexaco Corporation
Kenneth Balcomb, III	Center for Whale Research, Inc.
David Bernhart	National Marine Fisheries Service
Jack Caldwell	Consultant
Daniel Costa	Long Marine Laboratory, University of California-Santa Cruz
David Cottingham	Marine Mammal Commission
Penelope Dalton	Consortium for Oceanographic Research and Education
Gerald D'Spain	Scripps Institution of Oceanography
Chip Gill	International Association of Geophysical Contractors
Marsha Green	The Ocean Mammal Institute
Erin Heskett	International Fund for Animal Welfare
John Hildebrand	Scripps Inst. of Oceanography, Marine Mammal Commission
Michael Jasny	Natural Resources Defense Council
Darlene Ketten	Woods Hole Oceanographic Institution
Martin Kodis	U.S. Fish and Wildlife Service
Robert LaBelle	Minerals Management Service
Bill Lang	Minerals Management Service
RAdm. Tim McGee	Office of the Chief of Naval Operations (N61)
Kathy Metcalf	Chamber of Shipping of America
Paul Nachtigall	Hawaii Institute of Marine Biology
RAdm. Dick Pittenger, USN (Ret.)	Woods Hole Oceanographic Institution
G. Michael Purdy	Lamont-Doherty Earth Observatory
James Ray	Shell Global Solutions (US), Inc.
Michael Reeve	National Science Foundation
Joel Reynolds	Natural Resources Defense Council
Naomi Rose	Humane Society of the United States
Charles Schoennagel	Minerals Management Service
Alexander Shor	National Science Foundation
Mark Simmonds	Whale and Dolphin Conservation Society
V. Frank Stone	Office of the Chief of Naval Operations (N45)
Bruce Tackett	ExxonMobil Corporation
RAdm. Steven Tomaszewski	Office of the Chief of Naval Operations (N61)
Peter Tyack	Woods Hole Oceanographic Institution
Sara Wan	California Coastal Commission
Lindy Weilgart	Dalhousie University
Donna Wieting	National Marine Fisheries Service
Judy Wilson	Minerals Management Service
Peter Worcester	Scripps Institution of Oceanography
Nina Young	The Ocean Conservancy

## ATTACHMENT A

### **Presenters**

Doug Wartzok

Florida International University, and Marine Mammal  
Commission

### **Facilitators**

Suzanne Orenstein

Independent Facilitator

Lee Langstaff

Independent Facilitator

### **Staff**

Alyssa Campbell

Marine Mammal Commission

Tara Cox

Marine Mammal Commission

Erin Vos

Marine Mammal Commission

Andrew Wright

Marine Mammal Commission

### **Observers** (44)

Kyle Baker

National Marine Fisheries Service

Linda Bauch

American Petroleum Institute

Joel Bell

U.S. Navy

Deborah Ben-David

National Oceanic and Atmospheric Administration

Joe Christopher

Minerals Management Service

Colleen Corrigan

U.S. Fish and Wildlife Service

Alice Crowe

American Petroleum Institute

Marc Dantzker

Cornell Laboratory of Ornithology

Brad Dawe

RPS Hydrosearch

Cynthia Decker

Office of the Chief of Naval Operations

William Dunaway

U.S. Navy

Deborah Epperson

Minerals Management Service

Robert Gisiner

Office of Naval Research

Michael Goodwin

Office of Naval Research

Mardi Hastings

Hawley Family Foundation

Mac Hawley

National Marine Fisheries Service

Ken Hollingshead

Dstl

Graham Jackson

U.S. Navy

Karen Kohanowich

SAIC

Jennifer Latusek

National Marine Fisheries Service

Stephen Leathery

Scientific Solutions Incorporated

Jay Lustig

Minerals Management Service

Milo Mason

ExxonMobil Corporation

Rodger Melton

U.S. Navy

Glenn Mitchell

RPS Hydrosearch

John Morse

ChevronTexaco Energy Technology Co.

Pat O'Brien

SAIC

Dennis Peters

Office of the Chief of Naval Operations (N45)

Linda Petitpas

Lamont-Doherty Earth Observatory

Michael Rawson

## ATTACHMENT A

Carol Roden  
Bob Rogers  
Jerry Rosenberger  
William Rossiter  
Jennifer Salerno  
Kimberly Skrupky  
Aileen Smith  
Michael Stocker  
Nolty Theriot  
Maya Tolstoy  
Ben White  
Andrew Wigton  
John Young  
David Zinzer

Minerals Management Service  
Minerals Management Service  
IDA—Science and Technology Policy Institute  
Cetacean Society International  
Booz Allen Hamilton  
Marine Acoustics, Inc.  
U.S. Navy  
Seaflow  
National Ocean Industries Association  
Lamont-Doherty Earth Observatory  
Animal Welfare Institute  
ExxonMobil Corporation  
ExxonMobil Corporation  
Minerals Management Service

## ATTACHMENT B

### Questions and Issues for Consideration by Advisory Committee Submitted by Management and Mitigation Subcommittee

#### 1. Risk Assessment

**\*What can be done in addition to what is done now? What should be done??**

- Current Applications of Risk Assessment
  - Use standards of acceptable risk in MMPA and ESA, which differ (e.g., negligible impact, small numbers, jeopardy, etc.)
  - Legal questions and litigation have arisen re: negligible impact, small numbers, specific geographic area, etc.
- Are clarifications possible without statutory changes?
  - Not all Subcommittee members are comfortable with prospect of statutory changes; some fear revision will result in statutes that are less protective
- Do statutes need to be clarified or revised to address the following issues?
  - Complexity of implementing current standards for acceptable risk
  - Conflicting interpretations of statutory definitions of acceptable risk
- Some potential approaches to dealing with the complexity of implementing current legal definitions of acceptable risk:
  1. Prescriptive, e.g., develop PBR approach that would allow consideration of cumulative impacts, and would require statutory change
  2. Require that all permit applicants conduct risk assessments and provide their risk assessment models with all assumptions for regulatory review. Leave flexibility with regulators.
  3. Improve modeling to supplement limited empirical information. Conduct real-world validation/corroboration studies, and use adaptive management strategies to allow feedback, etc.
  4. Improve transparency about assumptions underlying models used to make decisions. Move toward quantitative risk assessments as the “state of the art” in regulation. Define, describe, and quantify uncertainties.
  5. Employ alternative decision-making tools (e.g., expert panels, expert opinion, stakeholder negotiations, management review processes, etc.). Retain a variety of options, but consider context of specific cases in determining appropriate approaches.

#### **Potential recommendations re: risk assessment**

1. Risk assessment is an important step in management system
2. Systems needs to become more quantitative – Work to quantify the uncertainties and improve the state of the art
3. Risk assessments must increase in transparency about the risk assessment process and the resulting findings, as well as about how precaution is built into the assessment
4. Improve risk assessment models to increase transparency about their assumptions
5. Validate models

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6. Examine the adequacy of risk assessments after an activity goes forward (e.g., verify number of species present and sound propagation model) and use the information to improve mitigation (e.g., through adaptive management practices).
7. Risk assessments may not be meaningful or appropriate in all cases (e.g., where information not available for a species).

### 1. Adequacy of Current Statutes to Address Management and Mitigation

**Are current statutes adequate? Is there a problem with the legal standards, their implementation, or both? Are there opportunities to improve them?**

All activities carried out by U.S. entities that have potential to cause takes are subject to statutory requirements (i.e., moratorium on takings), except for commercial fishing (exempted through its own statutory requirements) and activities carried out by international actors within US waters. There is also a lack of clarity about the application of U.S. statutes to activities carried out by U.S. entities within the waters of other countries.

Precaution is built in at two levels through the MMPA:

- Negligible impact standard
- Least practicable adverse impact standard

Standards for acceptable risk might be improved through statutory changes, though all Subcommittee members do not agree that statutory change is desirable or would be effective in addressing management issues.

Enforcement of current statutes is not adequate.

MMPA reauthorization will probably be taken up in coming year, and the reauthorization discussions will probably overlap with the Advisory Committee activities.

**\*Should Subcommittee/Advisory Committee try to come to agreement on whether statutory improvements are necessary?**

### 3. “Unaddressed” and Unregulated Sound Activities

The Subcommittee discussed certain sound-producing activities as being “unaddressed” in the current statute. These include commercial fishing, activities carried out by international actors, and activities carried out by US actors in the waters of other nations. In addition, the Subcommittee discussed certain sound-producing activities as being “unregulated,” meaning that, for whatever reason, statutory requirements have not been implemented through regulation. Shipping noise is an example of an unregulated activity. Activities may not be actively managed through regulatory system (i.e., are “unregulated”) for a variety of reasons:

- They may not be easy to regulate (e.g., multiple diffuse sources such as commercial shipping)
- Impacts may not be seen as important by the public
- There may be no known impacts, or the impacts may be poorly understood

## ATTACHMENT B

- The impacts may not be defined as a high priority for management (e.g. they are not acute)
- There is a lack of jurisdictional clarity and capability (who is responsible for regulating, where?)
- Design of statutes does not deal well with differences between point- and non-point (mobile, diffuse) sources of sound
- Agency resources are limited, and the current trigger for implementing regulations is a request for authorization from a user group

### **\*What could be done to improve regulation of all impacts?**

1. Determine which unaddressed and unregulated activities have the potential to cause impacts that violate MMPA
2. Determine who has responsibility for the activities and the regulation of those activities
3. Develop outreach and education:
  - Encourage user groups to analyze activities and possible impacts
  - Educate user groups about requirements of MMPA and ESA
4. Develop mechanism to address unaddressed and unregulated sources, possibly through:
  - Conditions of port entry
  - Habitat protection efforts
  - “Total Maximum Daily Load (TMDL) approach to address multiple source components of ambient sound
  - Increased sophistication of tools will be needed to take these initiatives

## **4. Acceptable Risk**

Currently, acceptable levels of risk are statutorily defined as small numbers and/or a negligible impact on a population, with measures to produce the least practicable adverse impacts required of all activities that are authorized.

While management efforts focus on these population-level standards, some groups are concerned about individual impacts as well. In some cases, individual marine mammals may be the target of concern:

- Focus at the individual level is important for enforcement efforts in order to identify impacts, because population-level impacts are difficult to detect
- Individual animal well-being is often an important value for the public, especially where harm is preventable, or the risk of harm to individuals can be greatly reduced

**\*Should the Advisory Committee try to provide guidance to Congress on this issue?  
What guidance could be developed?**

## **5. Mitigation Effectiveness**

**\*What can managers do to deal with the fact that some mitigation measures are not effective in certain situations?**



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### Options

1. Develop methodologies for assessing effectiveness.
2. Evaluate effectiveness while applying the mitigation measures.
3. Build research and reporting requirements into regulations and authorizations, and improve/standardize observer and reporting methods
4. Employ techniques that include precaution and address impacts, such as behavioral disturbance, that may lead to acute impacts
5. Continue research to define what constitutes a take (e.g., what exposure level causes a take?)
6. Evaluate the extent to which a measure prevents takes (e.g., under what conditions can observers be used?)
7. Use current mitigation measures until have something better.
8. Use integrated combinations of mitigation techniques that may be adequate
  - a. Recommend suites of tools that will get to desired goal
  - b. Develop best practices (e.g., for night activities, observers not adequate so must also use PAM) What can we say about which are best in which cases?
9. Identify which mitigation methods have likely benefit with some level of certainty, and use that as a criteria for mitigation requirements.
10. Decide whether/how existing measures can/should be applied in light of their limitations
11. Can we delineate the costs and benefits of various measures? Can we delineate which tools have the highest benefit with low or medium cost?

### **6. Precautionary Approaches** (See draft text in Attachment 1)

#### **\*What should be recommended on this topic?**

The Subcommittee agreed that the attached draft text is a useful starting point for discussion. It includes the definition of the US Commission on Ocean Policy. The Advisory Committee should discuss what this draft language would mean for actual real-world practice, including examples of where additional precaution may be needed.

#### **Options for addressing this topic in report**

1. Show how precaution is used in case-specific risk assessments. Be explicit about how precaution is applied in management.
2. Discuss the extent and feasibility of using precautionary approaches in current risk assessment efforts.
3. Discuss how questions about scale of impacts over time and space are reflected in risk assessment processes and precaution?

### **7. Adaptive Management**

#### **\*Do current practices with respect to adaptive management need to change?**

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Adaptive management might be defined as the cyclical process of systematically testing assumptions, generating learning by evaluating the results of such testing, and further revising and improving management practices. While adaptive management approaches may be beneficial in a variety of ways, they may not be appropriate in all cases. Furthermore, there are concerns about the details of real-world application and practice of adaptive management, including:

1. Adaptive management approaches are not currently used on case-by-case basis due to resource limitations in regulatory agencies
2. The implementation of adaptive management could be improved. For example, feedback mechanisms could be more systematic, and more thoroughly used and analyzed.
3. Adaptive management requires filling data gaps with research and collecting better baseline information. “Baselines” are difficult to define and may include some effects from preexisting anthropogenic impacts.
4. Evaluation of mitigation effectiveness for sound producing activities should be an ongoing adaptive management objective.
5. When applying adaptive management approaches, the level of uncertainty needs to be considered and quantified.
6. Adaptive management may not be precautionary enough in the views of some stakeholders.

### **8. Extent and Nature of Problem of Anthropogenic Sound and Marine Mammals**

Is the goal of the management system to reduce overall levels of the anthropogenic component of ambient noise in the marine environment, which may have effects on marine mammals over the long or short term, or to address specific impacts from specific activities that are known to harm marine mammals, or both? Chronic impacts may present greater risk; acute impacts are the current focus of the regulatory system.

Congress has asked Advisory Committee to outline the “extent of global threats.” Advisory Committee should discuss how to respond to this request from Congress. The Subcommittee on the Synthesis of Current Knowledge will address this issue.

**\*What can Advisory Committee say about this in its final report?**

### **9. International Issues (issue to be considered fully at later date)**

How to address international aspects of problem?  
What can we learn to add to what we are doing?

ATTACHMENT C

**DRAFT**

November 22, 2004 Draft for Advisory Committee Discussion

**DO NOT CITE OR QUOTE**

**PROPOSED RECOMMENDATIONS FOR**  
**IMPROVING THE SCIENTIFIC RESEARCH**  
**PERMITTING AND INCIDENTAL HARASSMENT**  
**AUTHORIZATION PROCESS**

SUBMITTED BY THE WORK GROUP ON PERMITTING  
AS A STARTING POINT FOR ADVISORY COMMITTEE DISCUSSION

**RECOMMENDATIONS FOR IMPROVING THE SCIENTIFIC RESEARCH  
PERMITTING AND INCIDENTAL HARASSMENT AUTHORIZATION PROCESS**

**Introduction**

The FACA Panel was created to address acoustic issues and marine mammals and this ad hoc subgroup was formed to more specifically draft recommendations for improving the Scientific Research Permitting and Incidental Harassment Authorization process. While the expertise of the Panel relates mostly to acoustic research on marine mammals or acoustic research that incidentally takes marine mammals, the ad hoc subgroup recognized that many of the problems and recommendations were applicable to the broader marine mammal research community and regulated community. Major concerns are the cost, time, and regulatory expertise needed for a researcher to obtain a permit or authorization to conduct acoustic that could impact marine mammals. Likewise the cost, time, and practicality issues (e.g. case-by-case permitting) may not be appropriate for repetitive activities that do not change significantly over time. In addition, the FACA Panel raised concerns related to the threshold for determining when injury or harassment occurred (Level A or B harassment); the difficulty in complying effectively with the geographic region and small numbers requirements; a general lack of understanding of the permitting process; and the lack of clear guidance as to when compliance with other statutes such as the National Environmental Policy Act or the Endangered Species Act may require additional documentation. Researchers that undertake research on or incidentally take marine mammals are in need of a timely, predictable, and cost-effective permitting or authorization process under the MMPA.

A growing level of caution on this issue has resulted in increased uncertainty, regulatory burden, and costs for researchers, funding agencies and the regulatory agencies that must process such permits or authorizations. Therefore, the basic problem is how do we protect marine mammals with an effective process that does not curtail important research? More vexing is the underlying circular situation of lack of information to make permitting and regulatory decisions. When the regulatory decision is to permit research and research is the source of more information there exists a particular problem. To break out of this situation requires that we more clearly identify the major obstacles and how we can move forward in light of information needs. The following recommendations attempt to meet that goal.

**Scope**

The scope of these recommendations includes scientific research permits for research on marine mammals that involves the use of sound and Incidental Take and Harassment Authorizations for scientific research that may incidentally take marine mammals by the introduction of sound.

## ATTACHMENT C

### Background

The MMPA and existing regulatory regime includes a number of mechanisms to provide permits and authorizations (all of which provide for public comment and review) for the taking of marine mammals in the course of scientific research:

1. Section 104(c)(3) allows the issuance of a takings permit for scientific research on marine mammals. An expedited process is authorized for harassment that is limited to disturbance.
2. Section 101(a)(5)(A) allows a 5-year authorization to incidentally take marine mammals during a specific activity under regulations establishing mitigation methods, monitoring and reporting.
3. Section 101(a)(5)(D) allows a 1-year authorization to incidentally harass marine mammals during a specific activity that specifies mitigation methods, monitoring and reporting.

### Improving the Existing Permitting Process

- NMFS needs to provide funding agencies and researchers with clear guidelines to use in determining whether or not a particular research activity requires NEPA documentation or an application under the MMPA.
  - Rationale: NEPA requires that funding (action) agencies have in place a process to determine whether or not the actions that they propose might have significant environmental impacts. For actions that appear to have the potential for significant impact, the first step in this process normally involves the preparation of an Environmental Assessment (EA) to objectively analyze the possible environmental effects of the proposed action. Key issues are determining when it is necessary to prepare an EA and, in turn, when an MMPA application is required. NMFS should provide clear guidelines that can be used to determine what actions involving underwater sound require preparation of an EA and what type of authorization is required.. . The funding (action) agencies should also review their internal NEPA processes to ensure that they are adequate to fulfill NEPA requirements in a timely and cost-effective way and that they are designed to minimize the burden that needs to be borne by the individual researcher.
- NMFS should work with applicants to reduce the cost and time of preparing the required NEPA and MMPA application documentation.
  - Rationale: Because cost and time are most often limiting factors for researchers, NMFS should work to reduce the cost and time by providing standard background documents, application information, and references available online through its website. Standard biological information such as species descriptions, abundance estimates, and geographic area information could be posted on the web and accessible to applicants to incorporate into their application.
- NMFS should, when appropriate, look for mechanisms to process and issue collectively NEPA and MMPA application documentations that are either similar by species, region, or activity.
  - Rationale: There may be situations such as Steller sea lion research in Alaska or North Atlantic right whale research in the Northeast where a number of research activities on a particular marine mammal species should be analyzed together and authorization should be coordinated. The same may be true for categories of activities under an Incidental Take or Harassment Authorizations. Processing similar research activities may streamline the process but also carries the risk that a legal challenge on one portion of the permit may stop research associated with other projects under the permit. Furthermore, activities that take place in different oceans and on different species do not lend themselves to this approach so it may not be practical in many cases. Those cases that are practical for acoustic issues should be identified.

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- When appropriate NMFS, FWS and other federal agencies should work toward developing programmatic environmental impact statements (EIS) related to marine mammal research and acoustic research.
  - Rationale: The development of an EIS or Environmental Assessment can be costly (between \$400,000 to over a \$1 million per EIS) and consumes considerable staff resources. NMFS has identified several situations that would favor programmatic EIS's, including one on the acoustic criteria, that it plans to develop. Having such programmatic NEPA documents in place can reduce the delay associated with the development of documents for each permit, can provide greater NEPA compliance, which has been a trigger for litigation, and can enhance cumulative impact analysis for those research or incidental take activities.

The risk is that, should the programmatic EIS be delayed in process or be contested in court, all research activities under that programmatic EIS could be delayed, challenged or enjoined. Appropriate use is important. Moreover, even though a programmatic EIS may lack all the specifics regarding every activity covering several years of research, supplemental NEPA documents could be developed containing appropriate project specific species analysis. For instance, NSF cannot predict more than 1 – 2 years out which proposals for research requiring a seismic survey research ship will be funded. The resulting projects are often independent, unrelated to each other, and undertaken throughout the oceans of the world. The programmatic EIS can, however, effectively address the specifics of the ship, the equipment and instrumentation utilized for seismic surveys, intensity and spatial characteristics of sound production, and general aspects of mitigation strategies while a supplement NEPA document can address each project-specific species analysis.

If NMFS, FWS, and other federal agencies are to produce programmatic EIS documents over the long-term with some regularity, Congress should provide additional funds so these agencies can produce the documents. Finally, other agencies should be encouraged to work with NMFS to assess the information requirements needed to develop these documents and the most effective means to produce them.

- Funding agencies, NMFS and researchers should work to achieve better linkages between timing of the permit process (e.g. from time of submission to issuance), securing funding for the research, and scheduling of the research to avoid situations where the research is funded and scheduled but the permit has not been secured.
  - Rationale: It may be difficult to begin the permitting process, prior to securing funding for the research and likewise difficult to secure funding without a permit. This situation is particularly true for acoustic research that may be controversial. Online applications and perhaps changing the permitting system so that permits are submitted and issued according to a particular cycle, may help. In addition, during the scientific planning process preliminary assessments of temporal and spatial marine mammal distribution may be useful for minimizing potential issues. It is still important for researchers to allow for the time necessary for the permitting process to enable agencies and research ship operators (e.g. UNOLS - the University- National Oceanographic Laboratory System) to effectively coordinate complex ship schedules.
- Work towards a more coordinated approach between wildlife agencies.

## ATTACHMENT C

- Rationale: Perhaps the most effective immediate approach would be for NMFS and FWS, through an interagency process, to work toward a more comprehensive and coordinated approach to implementation of both the Marine Mammal Protection Act and the Endangered Species Act.

### Changes to the Regulatory Regime for the Permitting Process

- [Within 6 months, NMFS, in consultation with the MMC and FWS, should prepare an analysis of how to improve, strengthen, and streamline the permit process for marine mammal and acoustic research while maintaining protection for marine mammals and achieving the goals of the MMPA. Working within the existing regulatory regime in the MMPA, including recent changes, the analysis would consider: (1) the Ocean Commission recommendations; (2) the recommendations in the various National Research Council reports on sound as they relate to the regulatory regime; and (3) the recommendations from this Advisory Panel; and (4) other appropriate new reports and scientific information. NMFS and FWS must convene a stakeholders group to consider the analysis in development of any proposed revisions to the regulatory regime.
- Rationale: The Ocean Commission Report has several recommendations related to unclear permitting and review standards, the definition of harassment, and programmatic permitting. The National Research Council reports express concern that the regulatory system discourages research that would benefit conservation of marine mammals and their ecosystems and offers a number of alternative regulatory regimes and/or changes to the existing system. The recommendations of the Ocean Commission and the National Research Council reports apply to a much broader range of activities than scientific research permits and authorizations, however, we believe the recommended analysis should be directed toward the regulatory regime.

Most members of the research community fully endorse the recommendations within Ocean Commission and the NRC reports. They believe these recommendations should be implemented in order to reduce barriers to scientific research and allow important conservation research to move forward without sacrificing marine mammal protection. On the other hand, members of the environmental community, and others, view some of these recommendations as controversial and somewhat vague and believe they could lead to less protections for marine mammals if implemented. This difference of opinion among key stakeholders highlights the need for all interested parties to thoroughly review, evaluate, and seek consensus on the best means to revise the current scientific research regulatory regime to focus regulatory efforts on the most significant problems while at the same time being protective of marine mammal populations.]

- Consider amending the Marine Mammal Protection Act to allow the Incidental Harassment Authorization to be issued for multiple years.
  - Rationale: Amending the MMPA to permit the Incidental Harassment Authorization to be issued for periods of three or five years would remove the obstacle of having to apply annually for the authorization for activities that occur each year. It also has the added benefit of enabling NMFS to undertake a more thorough analysis of the cumulative impacts of the activity on marine mammal stocks.

## ATTACHMENT C

### Funding, Education, and Technology

- The FACA Panel<sup>6</sup> recommends that Congress continue to provide and the Commerce Department request increased funding for National Marine Fisheries Service's (NMFS) Permit Office.
  - Rationale: FACA members noted that current staff and financial resources are insufficient to thoroughly process, on a timely basis, the large number of scientific research permits and authorizations, incidental harassment authorizations, and incidental take permits currently received by the Permit Office. In the 2005 Fiscal Year budget, the Senate provided to the Office of Protected Resources an increase of \$1 million for permitting functions and for the hiring of additional full time equivalents (staff). Continued funding at this level, at a minimum, is needed to provide the necessary staff resources and to process permit requests and develop NEPA documents related to permits and authorizations. Additional funds at the level of \$2 million a year for five years are needed for contracting out programmatic NEPA documents and hiring short-term contract staff to help develop and finalize NEPA documents.
- The FACA Panel recommends that there be increased funding for both funding agencies and regulatory agencies to comply with NEPA requirements.
  - Rationale: For funding agencies and regulatory agencies the cost of preparing environmental impact statements or environmental assessments associated with the scientific research permits and incidental harassment authorizations is substantial. To fully comply with NEPA, the MMPA, and the ESA, both the funding agencies and regulatory agencies require substantial increases in funding.
- All stakeholders should strive to educate the public about marine mammal and acoustic research.
  - Rationale: There is public controversy associated with some types of marine mammal and acoustic research. Scientists have a responsibility to explain clearly their research and its importance. Particularly in cases where there may be risk to the marine mammals and the science is still uncertain, all interest groups should strive to work together to address the public's concerns and allay controversy. It is also the responsibility of all interest groups to engage in education and outreach that involves a broad array of stakeholders, is coordinated, is fair and balanced representing an array of views, and is scientifically credible and accurate. Stakeholders should develop readily available education and outreach materials (e.g. fact sheets on issues) that are broadly reviewed, supported, and disseminated. Every effort should be made to make certain that whatever is presented as "science" cannot be viewed as propaganda.
- Regulators should work with researchers to devise incentives that can be provided to permittees for reducing their acoustic impacts.
  - Rationale: The research community should be encouraged to employ technologies that would minimize the impact to the marine environment. Such technologies would either place less noise in the ocean or increase the efficiency of sound detection so less sound would have to be used. Regulating and funding agencies and research community should look for incentives to accomplish this objective.

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<sup>6</sup> The working group should revisit how to address the issue of federal agencies supporting recommendations for increased federal funding for programs associated with the implementation of the permit system.



## ATTACHMENT D

### **Draft Recommendations for Outreach, Education and Communication**

Revised 12-6-04

Developed by U.S. Fish and Wildlife Service

#### **Introduction**

An important step to addressing the issue of impacts of anthropogenic sound on marine mammals is to develop outreach, education, and communication goals that are part of strategic planning and adaptive management efforts. In addition to mitigation, management and scientific research recommendations, which can directly affect the production of sound or its impacts on marine mammals, education and outreach efforts can inform all stakeholders of important issues that may affect them directly or indirectly. The inclusion of communication objectives in the Committee's report would provide opportunities for the development of creative solutions to regulation and invite the involvement of public entities in the process of decision-making. Effective communication processes will enable all interested stakeholders, including the general public, at local, regional, national and international levels, to participate in designing management strategies based on accessible information. In turn, collaboration and commitment would become part of the process and consensus would build more rapidly. Because the impact of human-produced sound on marine mammals is a widely debated issue, it is vital that the best applicable information and education be made available. Having plans in place to disseminate information when critical events occur can help to alleviate controversy and combat negative images while building support from the public. Proactive engagement of constituents encourages trust and enables action.

#### **Specific Recommendations**

1. Establish a Marine Mammal Protection Act course at the National Conservation Training Center, taught by specialists from the National Marine Fisheries Service and the U.S. Fish and Wildlife Service, for the purpose of educating regulators and the interested public in implementation of the Act.
2. Conduct outreach to the shipping industry for the purpose of providing information on marine mammals and acoustics, discussing regulations, and researching alternatives in shipping design and construction.
3. Support the U.S. Commission on Ocean Policy recommendation to establish an ocean curriculum through the creation of a textbook chapter or section on noise in the oceans and impacts to marine mammals and the ecosystem, including K-12 and college texts.
4. Expand the dissemination of educational materials on acoustics to a wider range of media outlets, such as the National Association of Science Writers. One possible outcome is the writing of a piece for the New York Times Tuesday science section (and similar forums) on the composition and purpose of the Advisory Committee.
5. Provide opportunities for a variety of interagency and international job exchange programs within the fields of acoustics and marine mammals.
6. Consider and support the recommendation from the National Research Council on Ocean Noise and Marine Mammals to address the need for communication

## ATTACHMENT D

- between the public and scientific community regarding fundamental acoustic concepts.
7. Expand NMFS lecture series to a greater number of sites and communities in the United States after consultation with various constituents and interest groups. Build on the connections established through the series so far and expand the email distribution announcements generated from the lectures.
  8. Strengthen the role of zoos, aquaria and other non-formal entities for the purpose of conservation education, including acoustic impacts to marine mammals. One example is to enhance the capacity of the National Aquarium at the US Department of Commerce to deliver public education programs by training staff, attracting and increasing visitor numbers, and providing funds for the development of traveling exhibition on sound and marine mammals. Develop marketing opportunities.
  9. Establish a centralized locale (*e.g.*, a web site) for the creation, coordination, and dissemination of public information regarding noise and marine mammals, with input from relevant stakeholders and interest groups.
  10. Collaborate with the media to produce Advisory Committee-endorsed publications and articles targeted to inform the public of report recommendations and related issues.

In addition, the Advisory Committee should support other recommendations from the U.S. Commission on Ocean Policy Report, 2004, as follows:

***Recommendation 8–15.*** *The Office of Naval Research (ONR) should reinvigorate its support of graduate education in ocean sciences and engineering. This could be accomplished, in part, by increasing the number of ocean-related awards made under ONR’s National Defense Science and Engineering Graduate Fellowship Program. (USCOP)*

***Recommendation 25–6.*** *The National Oceanic and Atmospheric Administration and the National Science Foundation should lead an expanded national ocean exploration program, with additional involvement from the U.S. Geological Survey and the U.S. Navy’s Office of Naval Research. Public outreach and education should be integral components of the program. (USCOP)*

## ATTACHMENT E

### **Criteria for Prioritizing Research - Brainstorming**

2 December Plenary Discussion

1. Relevance to improving management decision-making- (18.5)
  - Applicable to adaptive management
  - Evaluation and development of effective mitigation measures
  - Addresses current, active management question
  - Helpful in making judgments regarding impacts
  - Permitting decisions
  - Yields knowledge quickly
2. Contribution to baseline knowledge of marine mammals (7)
  - Contributes to overall zoological knowledge of marine mammal distributions and abundance
  - Contributes to knowledge of marine mammal behavior
  - Relates to hot spots
  - Data would be publicly shared (e.g., central database)
3. Yields results applicable to protecting marine life (7)
  - Clear conservation benefits
4. Increases understanding of potentially significant but understudied effects (4)
  - E.g., Research that explores cumulative and synergistic impacts
5. Cost-effective (dollars for results, low-cost high-return) (3)
6. Scientific merit (individual proposals) (3)
7. Uses non-invasive research methods (3)
8. Likely to produce conclusive results/data (3)
9. Clear relevance to understanding mechanisms underlying injury and mortality (2)
10. Helps increase understanding of population effects (2)
11. Practical to implement with respect to cost-benefit (2)
12. Research that integrates across disciplines (2)
13. Helps to understand ecosystems and ecosystem effects of sound (2)
14. Testing “accepted” assumptions
15. Improves understanding of relationships between strandings and sound
16. Directed toward reducing sound levels in the ocean
17. Leads to conservation of marine mammals in accordance with goals of MMPA
18. Relevance to big picture (broader range of the problem)
19. Expands number of species for which there are direct data on hearing
20. Takes advantage of existing captive animals
21. Identify and focus on getting info for species of concern
22. Provides new info on species of concern
23. Provides knowledge transferrable to other species
24. Eliminates specific sound sources from regulatory regime
25. Has potential to reduce public controversy
26. Leverages other efforts and info
27. Contributes to national defense
28. Contributes to national economy
29. High likelihood of making substantive contribution to understanding of issue
30. Process (methods) ensures that subject animals are given highest degree of protection from adverse effects

## **ATTACHMENT E**

31. Addresses recs in NRC 2004 bio sig report
32. Illuminates interface between acute and behavioral effects
33. Develops new technologies for studying marine mammal behavior in the wild
34. Develops new technologies for understanding marine mammal physiology